THE MIGRANT

A QUARTERLY JOURNAL
DEVOTED TO TENNESSEE BIRDS

Published by
THE TENNESSEE
ORNITHOLOGICAL
SOCIETY

celebrating
100 YEARS
1915-2015

Dec. 2015
Vol. 86, No. 4

THE MIGRANT
A QUARTERLY JOURNAL OF ORNITHOLOGY
Published by

THE TENNESSEE ORNITHOLOGICAL SOCIETY
The T.O.S. is a non-profit, educational, scientific and conservation organization.

EDITORIAL STAFF

Editor: Bob Ford, 808 Hatchie, Brownsville, TN 38012 <editorthemigrant@gmail.com>

Associate Editors:

Susan McWhirter, 274 Beech Grove Road, McMinnville, TN 37110 <snmcwhirter@gmail.com>
and
Martha Waldron, 1014 Murray Hill Lane, Memphis, TN 38120 <martha.waldron@gmail.com>

State Count Compiler: Ron Hoff, 282 Hackworth Lane, Clinton, TN 37716 <aves7000@bellsouth.net>

Season Editor: Richard L. Knight, 804 North Hills Dr., Johnson City, TN 37604 <rknight8@earthlink.net>

Regional Season Editors:
Western Coastal Plain: Dick Preston, 261 Sassafras Circle, Munford, TN 38058 <dickpreston@rittermail.com>
Highland Rim and Basin: Stephen C. Zipperer, 3105 Chapel Hills Drive, Murfreesboro, TN 37129 <stczipperer@aol.com>
Eastern Ridge and Valley: Richard L. Knight, 804 N. Hills Rd., Johnson City, TN 37604 <rknight8@earthlink.net>
Eastern Mountain: Richard P. Lewis, 407 V.I. Ranch Rd., Bristol, TN 37620 <mountainbirds@email.com>

OFFICERS FOR 2015-2017

President: Dr. Steve Routledge, 1515 N. Willow Bend Court, Clarksville, TN 37043 <eyerout@bellsouth.net>

Vice Presidents:
East Tenn. - Rack Cross, 300 River Edge Drive, Kingsport, TN 37660 <rackcross@gmail.com>
Middle Tenn. - Danny Shelton, 705 Countrywood Drive, Franklin, TN 37064 <dashelt@comcast.net>
West Tenn. - Martha Waldron, 1040 Murray Hill Lane, Memphis, TN <martha.waldron@gmail.com>

Treasurer: N. P. McWhirter, 274 Beech Grove Road, McMinnville, TN 37110 <npmcwhirter@gmail.com>

Secretary: Cyndi Routledge, 1515 N. Willow Bend Court, Clarksville, TN 37043 <routledges@bellsouth.net>

Directors-at-Large:
East Tenn. - Susan Hubley, 128 John Sevier Circle, Rogersville, TN. 37857 <shubley@msn.com>
Middle Tenn. - Daniel Moss, 395 Janet Drive, Pleasant View, TN 37146 <dmoss@earthlink.net>
West Tenn. - Allan Trently, 580 East Lafayette Street, Jackson, TN 38301 <Allan.Trently@tn.gov>

Curator: Charles P. Nicholson, P.O. Box 402, Norris, TN 37828 <cpnichol@bellsouth.net>

Assistant Curator: Ron Hoff, 282 Hackworth Lane, Clinton, TN 37716 <aves7000@bellsouth.net>

The Tennessee Warbler (TOS Newsletter) Editor: Theresa Graham, P.O. Box 366, Oakland, TN 38060 <2graham@bellsouth.net>

The TOS website can be found at: www.tnbirds.org

Send subscriptions & address changes to:
Tennessee Ornithological Society, 274 Beech Grove Road, McMinnville, TN 37110
Printed by: Russell Printing Options, 1800 Grand Ave., Knoxville, TN 37916

Copyright © 2014 by the Tennessee Ornithological Society — ISSN 0026-3575575

THE MIGRANT

Published by the Tennessee Ornithological Society
to Record and Encourage the Study of Birds in Tennessee
Issued in March, June, September and December

VOL. 86 DECEMBER 2015 NO. 4

The Migrant 86(4): 113-132, 2015

AN OVERVIEW OF A 51 YEAR STUDY OF BIRD CASUALTIES AT NASHVILLE'S WSMV TELEVISION TOWER 1960-2010

Sandy Bivens
8958 Hwy 70
Nashville, TN 37221
sandybivens@comcast.net

Jenny Nehring
416 Adams St.
Monte Vista, CO 81144
jennynehring@hotmail.com

Introduction

This overview represents a compilation of 51 years (1960-2010) of tower kill data from fall migration at one tower, the WSMV television tower on Knob Hill in Nashville, Davidson County, Tennessee. During this period 20,360 birds of 115 species were collected. This paper is a tribute to Amelia Laskey, Dr. Katherine Goodpasture, the volunteers with the Tennessee Ornithological Society, and to the contributions and impacts that citizen scientists can make. With data, science, natural history and oral histories, we tell the story of this project.

Birds of all species use weather variables as cues to determine when to migrate (Richardson 1978, Richardson 1990). In North America birds time autumn migration to take advantage of cool northerly tail winds associated with passing cold fronts thereby reducing the energy required for long flights (Berthold 1996, Richardson 1990). When optimal migratory weather conditions occur many birds depart for their destinations, forming large flocks composed of a variety of species.

Passerine birds are diurnally active except during migration when they switch to nocturnal migratory activity and spend daylight hours resting and feeding. Migrating at night reduces

the risk of predation, and migrating with other birds is thought to have benefits such as reducing energy consumption due to more efficient flight patterns, improved cultural transmission (experienced migrants guiding inexperienced or young birds), enhanced group orientation/navigation, and improved foraging efficiency in stopover areas (Berthold 1996).

Mass mortality of migrating birds due to collision with structures such as lighthouses, buildings, and communication towers is well documented (Avery et al. 1980, Hebert et al. 1995). Birds collide with these structures for a variety of reasons. The birds are most likely visually impaired to some degree because they are diurnally active birds migrating nocturnally. The lights on towers, buildings, and other structures required for aviation safety can attract disoriented birds in weather conditions that include dense cloud cover, fog or precipitation (Elkins 1988). It is thought that birds confuse these lights for stars and fly towards them (Kemper 1964), or that under conditions of poor visibility the intensity of the lights is magnified by reflection off the water in the air attracting birds to the bright light (Elkins 1988). In these situations, confused birds circle the structure and collide with guy wires, other structures in the vicinity, and other birds (Kemper 1964). Communication towers vary in height and in tower support systems. A study comparing the role of tower height and guy wires on avian collision found that tall towers have more impact than shorter towers, guyed towers had more impact than unguyed towers, and tall guyed towers had the most bird fatalities (Gehring et al, 2011). Recent studies show that non-flashing lights attract and kill more birds than flashing lights and that bird casualties can be greatly reduced, over 50%, at guyed towers by removing steady burning/non-flashing lights and replacing them with flashing lights. (Gehring et al. 2009).

Weather can pose many obstacles for birds during migration (Elkins 1988, Richardson 1978). When birds encounter adverse weather conditions such as cloud cover, fog, precipitation, and wind, many of their navigational cues are obscured, and they can become disoriented. During autumn migration, it is not uncommon for birds to catch-up to the frontal systems they are following or encounter stationary storm systems on their southward journey. When this happens disoriented birds are forced to navigate in stormy conditions subjecting them to hazards associated with man-made objects.

Wind can also play a role in migration casualties. Wind direction and speed usually vary with altitude. When migrating birds encounter unfavorable winds they adjust their flight altitude to select for a more favorable wind (Richardson 1990). Flying at a lower altitude increases the possibility of colliding with tall man-made structures even when visibility is clear.

Across the Eastern United States, many large collision-related migration kills have occurred during autumn migration (Tordoff and Mengel 1956). This may be because bird populations are at their highest following the breeding season. In North America between six and eight million birds may be killed by collisions with towers each year (Longcore et al. 2012).

TOS Responds

In the 1940's Amelia Laskey learned of large numbers of birds attracted to and killed at airport ceilometers and began systematically collecting bird casualties at the Nashville airport ceilometer. Her work played a pivotal role in bringing the mass destruction of birds to the attention of the public and gaining national cooperation with several agencies to change ceilometer operation protocols to eliminate the hazard to migrating birds (Laskey 1951, 1956a, 1956b). In the 1950's Mrs. Laskey turned her attention to a new threat to birds - television towers (Figure 1).

Figure 1. Amelia Laskey kept meticulous records for birds collected at the tower and all her projects. Photo from A.R. Laskey files at Warner Park Nature Center

WSMV, Nashville's first television station, came on the air in 1950 and its first tower was located at 14th and Compton near Belmont University. In 1957 the station attempted to build a larger tower at 38th and Dakota, but during the construction process the support wires failed and the tower collapsed. In 1959 another tower was built nearby in West Nashville at the current location off Knob Road and included pairs of support wires (Doug Smith, Director of Engineering, WSM-TV, personal communication).

The existence of the WSMV casualty dataset is primarily due to the efforts of two members of the Tennessee Ornithological Society, Amelia R. Laskey and Katherine A. Goodpasture. Their work inspired people across the country to investigate avian casualties at TV towers in their area. Mrs. Laskey was a licensed bird bander and bird rehabilitator; she coordinated the collection of birds at the WSMV tower, publishing tower data in eleven articles in *The Migrant*. Mrs. Laskey studied bird casualties at several Nashville area television towers. She began her study at the new WSMV tower on Knob Hill in 1960, and that first year 2,130 birds of 59 species were counted in six collections. Mrs. Laskey coordinated the WSMV project and published yearly reports until the early 1970's when Dr. Katherine A. Goodpasture took over the project.

Dr. Goodpasture was also a licensed bird bander and had been assisting Mrs. Laskey since the early 1960's (Figure 2). Dr. Goodpasture led the effort for over 20 years and used the dead birds for ornithological studies regarding skull maturation, sex ratios and wing length comparisons (Goodpasture 1963a, 1963b). Both women played an important role in teaching aspects of avian identification and taxonomy to others in the community. Their dedication, guidance and influence on others is the reason for ongoing, consistent, and scientific monitoring of avian mortality at the WSMV tower. Through the years over 25 articles reporting bird casualties at WSMV have been published in *The Migrant* (Appendix I).

A continuous 51 year volunteer led and supported study is significant. To quote Dr. Goodpasture from her article in *The Migrant* 30 years ago (Goodpasture 1986), "This long-term project would not have been possible without the interest and active participation of a group of Tennessee Ornithological Society members." Over 100 volunteers from TOS contributed thousands of hours in support of bird education and conservation during the course of this effort.

Figure 2. Dr. Katherine Goodpasture, Sandy Bivens and David Vogt sort and identify birds collected at the tower. Photo by Deb Beazley, 1986

Methods

The WSMV television tower was erected on Knob Hill in 1959 and is located at 36°N 8' 28", 86°W 51' 51", approximately 5 km southwest of downtown Nashville, TN. The tower is 417 meters tall and is positioned on Knob hill (elevation 207 meters); the combined elevation of the hill and tower total 824 meters above sea level. The tower is triangular, each side measuring 3.7 meters in width. The tower is supported by a total of 36 guy wires that are attached at 6 different levels or tiers along the height of the tower (Figure 3). At each tier a pair of wires is connected on each of the three sides of the triangular tower. The length of guy wires ranges from 622 meters to 149 meters. The length of the tower is lit for aviation safety with red lights patterned so that 5 levels of flashing beacons are evenly spaced between 5 levels of non-flashing lights. This lighting pattern has not changed since the tower was erected. The tower and two small maintenance buildings are enclosed by a security fence. The region inside the fence searched by volunteers looking for casualties is an area of approximately 4,700 square meters.

The area under the tower was searched every morning at 0700 by volunteers, primarily members of the Nashville chapter of the Tennessee Ornithological Society. Collections were made from 1 September through 31 October, dates that correspond to the period of peak migration activity in the Nashville area (Parmer 1985). Birds were collected during autumn migration only; several years of searches during spring migration proved unproductive.

Records of casualty collections note the species of birds collected by date (Laskey unpublished, Goodpasture unpublished, Bivens unpublished). Using these raw data, casualty records from 1960-2010 were compiled into a computer database. Fall plumages and the level of deterioration of the birds made determining age and sex difficult. Notations of the age and sex of the bird casualties were not part of the regular protocol but occasionally were listed in the field notebooks. To accurately age and sex a specimen examination of skulls and gonads in a laboratory is required. If plumages allowed or specimens were dissected or skulled (often to teach banders to see the ossified skull or pattern of ossification) then age or sex were recorded.

Figure 3. The Guy wires are visible at the WSMV tower at sunrise. Photos by Deb Beazley, 1995

Dr. Goodpasture studied the age and sex of tower casualties at WSM and WSIX in 1962 (316 birds) and 1963 (453 birds) at the Department of Pathology Laboratory at Vanderbilt University and published papers of her results (Goodpasture 1963a, 1963b). For example, she examined 89 Tennessee Warblers in the collection and showed that age and sex could be determined by a combination of wing length and plumage characteristics.

Results and Discussion

From 1960 to 2010, 20,360 birds of 115 different species were collected at the WSMV tower. A summary of 1960-1997 casualty collections was previously published in *The Migrant* (Nehring and Bivens 1999). Since that time, 480 additional birds of 54 species were collected at the tower from 1998-2010 (Table 1). From 1998-2010 three new species were collected that were not a part of the 1960-1997 dataset: Chimney Swift (*Chaetura pelagica*), Downy Woodpecker (*Picoides pubescens*), and LeConte's Sparrow (*Ammodramus leconteii*). The top 10 species and number collected from 1998-2010 are shown in Table 2.

Table 1. Total birds and total species collected at the WSMV tower 1998-2010.

Year	Total Birds	# Species
1998	32	12
1999	26	10
2000	43	18
2001	13	7
2002	56	18
2003	12	9
2004	29	15
2005	85	22
2006	90	20
2007	26	15
2008	39	16
2009	24	15
2010	5	4
Grand Total	480	54

During the collection time period two very large mortality events occurred at the tower. The first was on the night of 26 September 1968 when 5,399 birds collided with the tower and died. The second major casualty event occurred 28 September 1970 when 3,487 birds were killed in a single night. The birds killed on these two nights represent 43.6% of all the birds collected during the 51 year period. Extremely high casualty events are well documented in the literature and are usually associated with poor weather conditions (Elkins 1988, Johnston and Haines 1957, Tordoff and Mengel 1956, Laskey 1951, 1969, 1971). The weather conditions reported for these two large kill events both included a change in wind direction to the north, overcast skies, and precipitation (Laskey 1969, 1971). There are many factors at play for massive kill events, quoting Amelia Laskey, "A heavy kill did not always follow every occurrence of this type of weather or surface fog. However, the height above ground at which the birds were traveling would doubtless have an effect on their attraction to surface lights and tall, lighted structures. A layer of clouds, below their flight altitude would also serve to protect them from the distraction of bright lights." (Laskey 1969).

Almost all of the birds collected at the tower are neotropical migrants; while the number of birds collected annually is variable there is a great deal of similarity in the most common species collected.

There was a large overlap in the top 10 species collected for the 1960-2010 dataset compared to the 1998-2010 dataset (Table 2) and the top 10 species collected for the two big kill days (Table 3). The top 5 species for 1960-2010 are the same as the top 5 species 1998-2010. Similarly the top 8 species are the same between the two big kill days. The most common birds at the WSMV tower reflect findings at other towers: Ovenbirds, Tennessee Warblers, Red-eyed Vireos and Magnolia Warblers are frequently top species reported at casualty sites in other areas of the country, especially the Eastern United States (Crawford 1974, Johnston and Haines 1957, Kemper 1996, Gehring et. al 2009, Longcore 2013). These four species alone make up for 58% of all birds collected at the WSMV tower. It is likely that some species of birds are more likely to hit man-made structures during migration than others, as is seen in the WSMV data. Many neotropical migrants known to pass through middle Tennessee during autumn migration are either only incidentally represented at the tower with few records or not represented at all.

Table 2. Top 10 species and the number collected for 1998-2010 as compared to the entire dataset 1960-2010.

1998-2010			1960-2010		
Rank	**Species**	**Total Collected**	**Rank**	**Species**	**Total Collected**
1	Tennessee Warbler *(Oreothlypis peregrina)*	85	1	Ovenbird *(Seiurus aurocapilla)*	4431
2	Red-eyed Vireo *(Vireo olivaceus)*	74	2	Tennessee Warbler *(Oreothlypis peregrina)*	3664
3	Ovenbird *(Seiurus aurocapilla)*	69	3	Magnolia Warbler *(Setophaga magnolia)*	2018
4	Magnolia Warbler *(Setophaga magnolia)*	26	4	Red-eyed Vireo *(Vireo olivaceus)*	1692
5	Black-and-white Warbler *(Mniotilta varia)*	22	5	Black-and-white Warbler *(Mniotilta varia)*	1199
6	Western Palm Warbler *(Setophaga palmarum)*	17	6	Chestnut-sided Warbler *(Setophaga pensylvanica)*	958
7	Yellow-breasted Chat *(Icteria virens)*	15	7	Bay-breasted Warbler *(Setophaga castanea)*	864
8	Golden-crowned Kinglet *(Regulus satrapa)*	14	8	American Redstart *(Setophaga ruticilla)*	566
9	Yellow-billed Cuckoo *(Coccyzus americanus)*	14	9	Black-throated Green Warbler *(Setophaga virens)*	373
10	American Redstart *(Setophaga ruticilla)*	11	10	Common Yellowthroat *(Geothlypis trichas)*	366

Note: All names of birds follow the American Ornithologists' Union (2012).

Table 3. The top 10 species and number collected on the two big kill dates in September 1968 and 1970.

September 26, 1968			September 28, 1970		
Rank	**Species**	**Total Collected**	**Rank**	**Species**	**Total Collected**
1	Ovenbird *(Seiurus aurocapilla)*	1847	1	Tennessee Warbler *(Oreothlypis peregrina)*	818
2	Tennessee Warbler *(Oreothlypis peregrina)*	808	2	Ovenbird *(Seiurus aurocapilla)*	625
3	Magnolia Warbler *(Setophaga magnolia)*	777	3	Black-and-white Warbler *(Mniotilta varia)*	425
4	Chestnut-sided Warbler *(Setophaga pensylvanica)*	329	4	Magnolia Warbler *(Setophaga magnolia)*	405
5	Black-and-white Warbler *(Mniotilta varia)*	311	5	Chestnut-sided Warbler *(Setophaga pensylvanica)*	264
6	Red-eyed Vireo *(Vireo olivaceus)*	225	6	American Redstart *(Setophaga ruticilla)*	174
7	American Redstart *(Setophaga ruticilla)*	190	7	Red-eyed Vireo *(Vireo olivaceus)*	163
8	Bay-breasted Warbler *(Setophaga castanea)*	105	8	Bay-breasted Warbler *(Setophaga castanea)*	75
9	Northern Waterthrush *(Parkesia noveboracensis)*	90	9	Common Yellowthroat *(Geothlypis trichas)*	67
10	Blackburnian Warbler *(Setophaga fusca)*	82	10	Gray Catbird *(Dumetella carolinensis)*	54

Note: All names of birds follow the American Ornithologists' Union (2012).

The number of birds collected annually has declined dramatically through the years (Figure 4), which may reflect overall bird population trends (Nehring 1998, Morris 2003) or changes on the landscape, such as an increase in city lights as Nashville expanded and grew around the tower location on Knob Hill. Additionally, perhaps the urban sprawl has changed migratory routes and many birds are avoiding Nashville altogether.

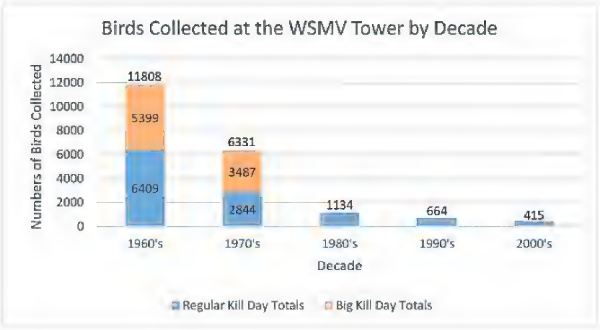


Figure 4. Total birds collected at the WSMV tower 1960-2009 by decade. The big kill days 26 September 1968 and 28 September 1970 are represented separately in the decade totals. Birds collected in 2010, the last year of collection are not included as these birds are in the 2010's decade.

Reflections from the volunteer collectors

This project exemplifies the contributions citizens can make to science. Although the impact humans have on wildlife, and specifically to migrating birds can be devastating, taking the opportunity to collect, study and document migration casualty information is the least we can do to make something positive out of this destruction. Long-term datasets like the WSMV data are unusual, similar but shorter duration datasets exist for many towers in the United States. Without the generations of dedicated volunteer bird casualty collectors spending thousands of hours in the field this bird study would not have been possible. Here are some recollections from a few collectors.

Amelia Laskey, notes from *The Migrant* - In 1960, the first year of the study, most of the bird collecting was done by personnel of the Tennessee Game and Fish Commission (now the Tennessee Wildlife Resources Agency) and brought to Mrs. Laskey to identify. As most of the birds collected that first year were not game birds, the collecting was turned over to Mrs. Laskey and the other NTOS volunteers the next year (Michael Bierly, per com). Some interesting birds found the first year include Virginia Rail and Yellow Rail, Black-billed Cuckoo (4), Blackpoll Warbler (third fall record – all casualty specimens), Nelson's Sharp-tailed Sparrow (third record of this species for Tennessee) and several early and late record dates for various species. A Gray Catbird casualty found on 28 September 1960, was carrying Fish and Wildlife Service band No. 58-127423. It was banded as an adult on 19 May 1960 at Lisle, Illinois by Dr. Edmund Jurica. Twenty injured birds were captured and although most did not survive, Mrs. Laskey banded and released 4 Red-eyed Vireos, 1 Tennessee Warbler, 1 Nashville Warbler, 1 Bay-breasted Warbler and 1 American Redstart. Mrs. Laskey, demonstrating her well-known and documented detailed observations and varied interests, made notes of ants and maggots causing "rapid destruction of the tower victims. From an incomplete collection of these insects sent to Marion R. Smith of the U.S. National Museum, he identified eight species of worker ants." (Laskey 1960)

Mrs. Laskey regularly reported in her articles on the strong effort made to study and use the dead birds collected. "An attempt has been made each year to utilize this material that would have otherwise gone to waste. Many of the birds are preserved (under my U.S. Fish and Wildlife Service collecting permit) for studies of fall plumages. Among them is a Tennessee Warbler in atypical plumage (verified by Dr. John W. Aldrich, U. S. Nat. Mus.). The throat of this bird is yellow but across the breast is a band 16 mm wide of a dark color similar to the crown in fall, a grayish olive-green. This year, 175 specimens were placed in individual plastic bags, sealed, labeled, frozen, then packed in dry ice and sent in an insulated container by air freight to the University of Nebraska for a study of feather parasites. The remaining birds (unless in bad condition during warm weather) are frozen and rationed to the aged Red-tailed Hawk and Great Horned Owls in captivity at my home since injured, 14, 10 and 17 years ago, respectively." (Laskey 1962)

Figure 5. Dr. Katherine Goodpasture examines and identifies bird tower casualties in 1964. Photo by Michael Bierly.

Michael Bierly - Michael Bierly monitored, collected, documented and worked with Mrs. Laskey and Mrs. Goodpasture on television tower studies in the Nashville area for many years.

One of his strongest memories "was going out to the tower at night". He has especially vivid memories from a large bird kill on 28 September 1970 when 3,487 birds of 74 species were collected. "I woke up at 1:00 or 2:00 a.m. and went outside and saw the skies moving and heard many bird chips". He drove out to the tower and immediately heard birds chipping and saw birds circling the tower and birds were falling out of the sky all around him. "The noise of the birds chipping and falling was incredible. Birds were chipping and disoriented and circling the tower and the wires." He and Mrs. Laskey took them to her house and laid them all out on the table in her kitchenette. They spent the whole day identifying and separating the birds.

Another memory was at Mrs. Goodpasture's home where they were again going through piles of birds and talking about them and separating them when she threw one to him. They both knew immediately it was a Blackpoll Warbler. Many new species to the Nashville area as well as early and late dates were documented from the tower study.

From the 1971 report (Bierly 1973), "The season yielded no new extreme migration dates, but several near records. Seldom recorded tower casualties were Great Crested Flycatcher, Cerulean Warbler and Red-winged Blackbird. Blackburnian Warbler was recorded in near record numbers and Ovenbird continued to be the biggest loser among warblers."

David Vogt - "On an occasion when I was collecting tower kills, one day that I recall had a

fair number of casualties. I came across a pile of feathers that suggested that one of the local predators that took advantage of the "easy pickings" to be found at the base of the tower, had eaten a tower-killed bird and left only feathers. This was not an unusual occurrence at the tower and the feathers were obviously those of a common species, a flicker, but the flight feathers of this individual had salmon colored shafts indicative of the red-shafted form of flicker species.

I sent these feathers in to the Smithsonian Institute who compared the feathers to those in the study skin collection. The museum reported that the feathers found at the tower were "consistent with" those in their collection that were identified as flickers of the western, red-shafted subspecies. To my knowledge, there is no other record of red-shafted flickers in Tennessee. This was published in the Season Report and the feathers deposited in the study skin collection at the Warner Park Nature Center."

Sandy Bivens – "I first learned about the WSMV tower project when I attended Michael Bierly's bird classes in the late 1970's. Michael, an expert birder, teacher and licensed bird bander, passed around trays of bird study skins, pointed out numerous identification methods, and told stories of large numbers of nocturnal migrants hitting towers. Many of these specimens had been collected at Nashville television towers and were used to teach hundreds of people bird identification, fall plumages, migration and natural history.

Later I started going out to Mrs. Goodpasture's farm, Basin Spring, for bird banding on fall Sundays and we would start each morning at the tower before heading to the farm. We walked a specific pattern to carefully cover the entire area beneath the tower and collect the birds. I remember her stories of big kill days when thousands of birds hit the tower and all collectors were summoned to pick up and process the birds. She talked about buying a freezer for a large bird fall and spending a year dissecting, ageing and sexing, measuring and carefully describing each bird. That study became an important paper on age and sex determination of tower casualties and is still used by bird banders today – especially for the Tennessee Warbler.

I remember years of dead birds dropped off at the nature center and laid out in the library to identify and sort. And the many naturalists, volunteers and visitors who learned about bird identification, fall migration and changes in populations from the birds on the table" (Figure 6).

Figure 6. Ethel Kawamura and Jane Marzoni sort and identify birds they collected at the WSMV Tower in the nature center library. Photo by Deb Beazley, 1995

Jan Shaw - "I remember hoping each time I visited the WSMV tower

that I wouldn't find a lot of dead birds. But it was always interesting when I found one, and it amazed me every time how tiny and vulnerable it was."

Bob Ford - "I got a lot of satisfaction in knowing that I was part of such a long term study, and that so many others before me had walked that same route around the tower looking for birds."

Richard Connors - "Whether we found tower casualties or not, I recall almost always finding Yellow-billed Cuckoo feathers. We theorized that an owl was preying on the neighborhood cuckoos and perching on the guy wires to feed, thereby leaving plucked feathers below. I also remember admiring the big oak tree at the very crest of the hill, a Black Oak, I believe, and a fine specimen."

Wesley Roberts, Hillwood High School - "It was always a bit of an internal conflict. On my volunteer days, I would pick up a few students and head to the tower. We opened the gate and got out full of anticipation. There was a definite route to take around the fence-enclosed perimeter so that we could scan every possible place for a bird. The students were always eager to find one - and we usually did. I never understood why there were mostly Ovenbirds and we would offer several hypotheses about this phenomenon. Our conversations would lead to bird behavior in general and what natural adaptations may lead to tower kills. Why does migration occur? What, if anything, attracts birds to towers or is it just random? Why do they take the route through Nashville? Why do some weather phenomena lead to more kills? The conversations were not in a classroom but attempts to explain the real world while checking for species that may help us to understand wildlife better. So we picked up what we found, labeled them carefully, took them to the Warner Pak Nature Center for cataloging, and then continued our discussions in the classroom. Students experienced real world impacts on wildlife - it doesn›t get more real than holding a dead bird in your hand.

And then there's the internal conflict. I wanted so badly for the students to get the best possible first-hand experience of the birds. But I didn't want there to be any casualties that day or any other day either. We got to talk about that too."

Linda Kelly - "I picked up birds on Sunday mornings for about ten years. I always enjoyed seeing wildlife-other than birds-on my trips to the hill. There were curious deer, and I saw a copperhead, who hurried through the chain link fence, bobcats on many occasions, saw and heard coyotes, and saw one skunk. I had two live birds during my time there-Tennessee Warblers. I wish I had kept notes on all I found, which some days was 4 or 5 birds, and others not so many. I found feathers often and wondered how many we may have missed because a predator got there first. "

Jenny Nehring, MTSU Graduate Student – "I moved to Nashville Labor Day weekend

1995 and the first week I lived there I attended a NTOS meeting at Radnor Lake where I quickly met wonderful bird watchers who were willing to take a Western birdwatcher 'under their wing'. It didn't take me long to connect with several birding mentors - Jan Shaw, Hazel Cassel, and Portia MacMillan. Banding birds with Portia at her MAPS stations was especially thrilling, and I also joined Portia to collect birds at the WSMV tower. When I thought about the long-term migration casualty data from the WSMV tower and the dramatic decline in the number of birds collected over the years I was intrigued by what the dataset might tell us about bird populations. It seemed to me that the WSMV tower was similar to a mist net, 'sampling' birds as they passed through the area every fall. I had recently enrolled in graduate school at Middle Tennessee State University and I was hopeful that somehow the WSMV dataset could be part of my Master's Thesis project. Sandy Bivens generously trusted me to take the volumes of spiral notebooks of tower collection data home so I could compile all the data into a database. Long-term datasets like these are rare, there are only a handful of other places in the nation with this sort of data. The impact modern life has on migrating birds is devastating, and addressing and minimizing these impacts is a very slow, arduous process. Utilizing these casualty data and specimens as much as possible is the least we can do to offset this destruction."

Chris Sloan - "I remember vividly one morning in October 2005 when I arrived and found 57 birds scattered around the tower; it was the largest number I had ever found. It was sad and sobering to know that thirty or forty years ago, 57 birds would have been a light morning. This project puts a really bright spotlight on how badly our migratory songbird populations have been decimated by habitat loss, outdoor cats, and other man-made threats. The canary in the coalmine is dying, and we need to start paying more attention before it's too late."

Vera Vollbrecht, Warner Park Nature Center – "Although I am not a 'morning person', spending one morning each week visiting the tower was worth getting up. I remember driving up the hill many mornings seeing deer, coyote, and once a red fox. My weekly tower time during September and October allowed me an opportunity to experience seasonal changes and gave me quiet solitude before going to work on those days.

I was always conflicted when looking for birds because it was like a tragic treasure hunt. I wanted to find something, be successful, come home with a rare, prized species, but in doing so, it would of course mean that yet another fall migrant had been killed by the tower. Luckily for me, and mostly for the birds, over the few years I went to the tower I found very few birds.

We are extremely fortunate to have a large collection of study skins used for education and research at Warner Park Nature Center. Many of these skins, particularly warblers and vireos, came from kills recovered from the WSMV tower. Thousands of students and program participants have been exposed to birds, learned basic bird ID, taxonomy and much more by using the skins." (figure 7)

Naturalist Notes from the tower notebooks – The focus was looking for bird casualties, but the volunteers were all interested, curious and observant naturalists and so many other observations were discussed and recorded. Birds singing and observed; numerous feather and groups of feathers; hawks and owls sitting on wires, posts and the tower; flocks of migrating Palm Warblers, Yellow-Rumped Warblers, Robins, and Red-breasted Nuthatches; the first turkey reported. Mammals including squirrels, chipmunks, bats, flying squirrels, skunks, deer, foxes, coyotes, bobcats and plenty of dogs and cats. Insects; pellets and scats; weather, sunrises, sounds, clouds, storms and the view were also noted. "Very foggy, couldn't see the top of the tower"; "many hummingbirds visiting the morning glories covering the tower fence"; "huge, luminous, full harvest moon setting in the west – almost touchable!"

Figure 7: Naturalists examine bird study skins from the WSMV tower casualties housed in the Goodpasture Collection Room at Warner Park Nature Center. Photo by Deb Beazley

There are many stories, published and nonpublished, from mornings (and evenings) spent walking the area below the tower on Knob Hill - improbable numbers of Yellow-billed Cuckoos; a description of a night of bird fall; a comparison of three bird falls mentions the Bobolink and Mourning Warbler, the Blackpoll Warbler and 2 red bats. Henry Parmer, who collected some of the first birds at the tower in 1959, was still walking the tower with his dog in the 1980's and sharing stories from the early days. David Vogt, a regular collector for many years, put his expertise to work and made study skins of the best specimens. These are still available for bird education at the Warner Park Nature Center in the Goodpasture Collection Room. Mrs. Laskey's collection of years of notes, letters, records and data are there too. The collection database for all 51 years can also be made available to those interested. And the recollections, stories and education continue.

Conclusion

While the number of birds collected at the WSMV tower declined to only 5 in 2010 and daily collections no longer occur at the tower, the threats birds face during migration in Nashville and across the globe have not diminished. Each year it is estimated that 6.8 million birds die at towers in the United States and Canada (Longcore et. al 2012). Collision hazards are not limited to communication towers. Buildings, bridges, lighthouses, smoke stacks and a variety of manmade structures pose collision threats to birds. Furthermore, each year new and different types of threats are identified that impact birds during migration. For example, the use of LED lighting for city streets and exterior buildings has triggered growing concern for impacts to wildlife (Bogard 2013). While LED lights are more energy efficient and brighter, more light at night has negative impacts to wildlife.

But threats to birds caused by humans are also being observed and documented by humans with hope that solutions can be found. Scientists, citizen scientists, birders, organizations, educational campaigns, publicity, and people working together can and have made a difference. Mrs. Laskey did work with others to ultimately stop bird casualties at ceilometers. In 2015, for example, the Federal Aviation Administration and the Federal Communications Commission recognized that birds are much less attracted to flashing lights on towers and made changes in prescribed tower lighting to reduce the number of migratory bird collisions by as much as 70 percent. All new towers are required to use flashing lights only. Existing towers may request a lighting deviation to eliminate steady-burning lights and the FAA lists the steps to make these changes and quickly approves the requests (Gehring 2015). Audubon has launched a "Lights Out" initiative, a national effort to reduce the problem of avian migration casualty threats (http://www.audubon.org/conservation/project/lights-out). NYC Audubon collects data on building related bird mortality with D-bird, a component of Project Safe Flight (www.d-bird.org). Several agencies and organizations have released information and guidance to raise awareness of the magnitude of impacts certain types of infrastructure and lighting can have on birds, and help the general public know what steps they can take to address these impacts (U.S. Fish and Wildlife Service Best Practices https://www.fws.gov/migratorybirds/pdf/management/reducingbirdcollisionswithbuildings.pdf; ABC Guidelines: http://abcbirds.org/wp-content/uploads/2015/05/Bird-friendly-Building-Guide_2015.pdf, FLAP http://www.flap.org/ and All About Birds https://www.allaboutbirds.org/why-birds-hit-windows-and-how-you-can-help-prevent-it). Smart phones allow people to use National Weather Service radar to observe bird migration as it occurs. Last year in Manhattan the 9-11 memorial "Tribute in Light" was turned off at several intervals to allow thousands of disoriented birds to escape the light. BirdCast, a program of Cornell Lab of Ornithology, allows real-time predictions of bird migration (birdcast.info).

Much has been learned from the 51 year dataset of birds collected under the WSMV tower. One of the main lessons of this effort is the relevant contribution that citizens can make to science. The history of ornithology is rich with the contributions of lay people. While the citizen science project at the WSMV tower has concluded, hazards to migrating birds are numerous and increasing every year. Just as humans can create hazards, humans can alter aspects of these hazards to reduce and eliminate the toll they take on migrating birds. Citizens can contribute to the protection and preservation of birds by supporting educational campaigns, expanding awareness of hazards and encouraging change when solutions are identified.

As Dr. Katherine Goodpasture stated in 1963 "these fragments of data, gleaned from victims of ill wind, become useful to our attempts at reading the intricate pattern of migration."

Acknowledgements

We again give very special acknowledgements to Amelia R. Laskey and Katherine A. Goodpasture for the many years they dedicated to this project and the inspiration they

provided to others to keep it going.

Special thanks go to Paul Hamel for the encouragement to continue this project in 1990, to Michael Bierly for assistance with identification of the birds collected, and to the members of the Nashville Chapter of the Tennessee Ornithological Society and others who have dedicated their valuable time to collect the birds. Thanks also go to the Warner Park Nature Center for welcoming dead birds, providing freezer space, preparation of study skins, collection space and enthusiastic interest and support of the study. We wish to thank Deb Beazley and Mike Bierly for photographs, and Bob Ford, Editor of *The Migrant*, for his encouragement, support, reviews and contributions to this article. Thank you also to Joelle Gehring, Eric Kershner and Meghan Sadlowski for their reviews and suggestions on earlier drafts of this manuscript.

Special thanks go to WSMV for 51 years of cooperation and support of this project, and to Mr. Ed McDaniels who worked with us for most of the last 20 years, collected birds himself when needed, and helped keep the collections possible after security changes in 2001. And thank you to Doug Smith and George Randell who have continued this long-time support.

Sincere gratitude to the collectors, 1990-2010, whose dedication kept this long-term study going for 20 more years: Sue and Jack Ansley, Kim Bailey, Carolyn Bauer, Deb Beazley, Sandy Bivens, Kevin and Candice Bowden, Susan Bradfield, Hazel Cassel, Philip Casteel, Richard Connors, David and Cindy Crenshaw, Doug Dorer, Bob English, Pandy English, Bob Ford, Heather Gallagher, Ed Gleaves, Paul Hamel, Ethel Kawamura, Linda Kelly, Rob Lane, Galen Lenhert, Jane Marzoni, Portia Macmillian, Ed McDaniels, Diana McLusky, Jenny and Matt Nehring, Elizabeth O'Connor, Bob Parrish, Lee Patrick, Wesley Roberts and Hillwood High School Students, Mike Rodel, John Sharlet, Jan Shaw, Kathy Shaw, Chris Sloan, Ann Tarbell, David Vogt, Vera Vollbrecht, Miriam Weinstein, and Teri Wildt.

The authors are honored to have contributed to this study. Jenny Nehring will forever appreciate the trust Sandy Bivens had in her to allow access to the raw data. Not only was compiling and analyzing these data a great academic experience but she is honored to have contributed to such an amazing project. Sandy Bivens, a licensed bird bander, assisted with bird casualty collection at the WSMV tower over 30 years and coordinated the project from 1990-2010.

LITERATURE CITED

American Ornithologists' Union. 2012. Checklist of north and middle American birds. Seventh Edition. Washington, D.C., USA.

Avery, M.L., P.F. Springer, and N.S. Dailey. 1980. Avian mortality at man-made structures: an annotated bibliography (revised). US Fish and Wildlife Service, Washington D.C.

Berthold, P. 1996. Control of bird migration. Chapman and Hall. London.

Bierly, M.L. 1973. 1971 Fall television tower casualties in Nashville. The Migrant 44:5-6.

Bogard, P. 2013. Bring back the night: a fight against light pollution. Yale Environment 360, 19August2013 Report http://e360.yale.edu/feature/bringing_back_the_night__a_fight_against_light_pollution/2681/.

Crawford, R.L. 1974. Bird casualties at a Leon County, Florida TV tower, October 1966 – September 1973. Bulletin of Tall Timbers Research Station 18:1-27.

Elkins, N. 1988. Weather and bird behavior. Second Edition. T. and .D. Poyser, Calton, Staffordshire, England.

Gehring, J., P. Kerlinger, A. M. Manville II 2009. Communication towers, lights, and birds: successful methods of reducing the frequency of avian collisions. Ecological Applications, 19:2, pp. 505-514.

Gehring, J., P. Kerlinger, A. M. Manville II 2011. The role of tower height and guy wires on avian collisions with communication towers. Journal of Wildlife Management 75:848-855.

Gehring, Joelle. 2015. Opportunities to reduce bird collisions with communications towers while reducing tower lighting costs Federal Communications Commission, Washington DC. http://wireless.fcc.gov/migratory-birds/Light_Changes_Information_Update_120415.pdf.

Goodpasture, K.A. 1963a. Age, sex and wing length of tower casualties: fall migration, 1962. Bird-banding 34:191-199.

Goodpasture, K.A. 1963b. Age and sex determination of tower casualties, Nashville, 1963. The Migrant 34:67-70.

Goodpasture, K.A. 1986. Nashville, Tennessee television tower casualties 1984. The Migrant 57:71-72

Hebert, E., E. Reese, and L. Mark. 1995. Avian collision and electrocution: an annotated bibliography. California Energy Commission. Sacramento, CA.

Johnston, D.W. and T.P. Haines. 1957. Analysis of mass bird mortality in October, 1954. Auk 74:447-458.

Kemper, C.A. 1964. A tower for TV: 30,000 dead birds. Audubon Magazine 66:86-90.

Kemper, C.A. 1996. A study of bird mortality at a West Central Wisconsin TV tower from 1957-1995. Passenger Pigeon 58:19-235.

Laskey, A.R. 1951. Another disaster to migrating birds at the Nashville airport. The Migrant 22:57-60.

Laskey, A.R. 1956a. Bird casualties at Smyrna and Nashville ceilometers, 1955. The Migrant 27:9-10.

Laskey 1956b. Television towers and nocturnal bird migration. The Migrant 27:66-67.

Laskey, A.R. 1960. Bird migration casualties and weather conditions autumn 1958-1959-1960 The Migrant 31:61-65.

Laskey, A.R. 1962. Migration Data from television tower casualties at Nashville. The Migrant 33:7-8.

Laskey, A.R. 1969. T.V. tower casualties at Nashville in autumn 1968. The Migrant 40:25-27

Laskey, A.R. 1971. T.V. casualties at Nashville: spring and autumn, 1970. The Migrant 43:15-16.

Longcore, T., Rich, C., Mineau, P., MacDonald, B., Bert, D.G., Sullivan, L.M., Mutrie, E., Gauthreaux Jr., S.A., Avery, M.L., Crawford, R.L., Manville II, A.M., Travis, E.R., Drake, D., 2012. An estimate of avian mortality at communication towers in the United States and Canada. PLoS ONE 7, e34025.

Longcore, T., Rich, C., Mineau, P., MacDonald, B., Bert, D.G., Sullivan, L.M., Mutrie, E., Gauthreaux Jr., S.A., Avery, M.L., Crawford, R.L., Manville II, A.M., Travis, E.R., Drake, D., 2013. Avian mortality at communication towers in the United States and Canada: which species, how many, and where? Biological Conservation 158:10-219.

Morris, S.R., A.R. Clark, L.H. Bhatti, J.L. Glasgow 2003. Television tower mortality of migrant birds in western New York and Youngstown, Ohio. Northeastern Naturalist 10:67-76.

Nehring, J.D. 1998. Assessment of avian population change using migration casualty data from a television tower in Nashville, Tennessee [MSc thesis]. Murfreesboro (TN): Middle Tennessee State University.

Nehring, J. and S. Bivens 1999. A study of bird mortality at Nashville's WSMV television tower. The Migrant 70:1-8.

Parmer, H.E. compiler. 1985. Birds of the Nashville area. 4th ed. Nashville Chapter of the Tennessee Ornithological Society, Nashville, TN.

Richardson, W.J. 1978. Timing and amount of bird migration in relation to weather: a review. Okios 30:224-272.

Richardson, W.J. 1990. Timing of bird migration in relation to weather: updated review. In bird migration: physiology and ecophysiology (E. Gwinner, ed). Springer, Berlin, Heidelberg, New York.

Smith, Doug, 2016. Director of Engineering, WSMV -TV, Personal Conversation with Sandy Bivens, 1 April 2016.

Tordoff, H.B. and R.M. Mengel. 1956. Studies of birds killed in nocturnal migration. University of Kansas Publ. Mus. Nat. Hist. 10:1-44.

Appendix I. A list of articles in *The Migrant* about bird casualties at Television Towers; summaries of the large kill events at WSMV are listed in bold.

Migrant Article	**Author**	**Date**	**Vol**
Television Towers and Nocturnal Bird Migration	Amelia R. Laskey	Dec 1956	27:4
Television Tower Casualties	A.R. Laskey	Dec 1957	28:4
Bird Migration Casualties And Weather Conditions Autumns 1958 – 1959 – 1960	A.R. Laskey	Dec 1960	31:4
Observations at a T.V. Tower During a Bird Fall	John Odgen	Dec 1960	31:4
Migration Data from Television Tower Casualties at Nashville	A.R. Laskey	Mar 1962	33:1
Bird Casualties at a Nashville TV Tower	Albert F. Ganier	Dec 1962	33:4
Mortality of Night Migrants at Nashville TV Towers, 1963	A.R. Laskey	Dec 1963	34:4
Age and Sex Determination of Tower Casualties, Nashville, 1963	Katherine A. Goodpasture	Dec 1963	34:4
Data from the Nashville T.V. Tower Casualties Autumn 1964	A.R. Laskey	Dec 1964	35:4
Autumn 1965 TV Tower Casualties at Nashville	A.R. Laskey	Dec 1965	36:4
T.V. Tower Casualties at Nashville: Spring and Fall 1966	A.R. Laskey	Dec 1966	37:4
Spring Mortality of Blackpoll Warblers at a Nashville T.V. Tower	A.R. Laskey	Mar 1967	38:2
Television Tower Casualties at Nashville, Autumn 1967	A.R. Laskey	June 1968	39:2
T.V. Tower Casualties at Nashville in Autumn 1968	A.R. Laskey	June 1969	40:2
Autumn 1969 T.V. Tower Casualties at Nashville	A.R. Laskey	Dec 1969	40:4
T.V. Tower Casualties at Nashville: Spring and Autumn, 1970	A.R. Laskey	Mar 1971	42:1
1971 Fall Television Tower Casualties in Nashville	Michael Lee Bierly	Mar 1973	44:1
IN MEMORANDUM: Amelia Rudolph Laskey	K.A. Goodpasture	Dec 1973	44:4
Fall 1972 Television Tower Casualties in Nashville	K.A. Goodpasture	June 1974	45:2
Fall 1973 Television Tower Casualties in Nashville	K.A. Goodpasture	Sept 1974	45:3
Nashville Television Tower Casualties, 1874	K.A. Goodpasture	Sept 1975	46:3
Nashville Television Tower Casualties, 1975	K.A. Goodpasture	Mar 1976	47:1
Television Tower Casualties, 1976	K.A. Goodpasture	Sept 1978	49:3
Television Tower Casualties, 1976-1983	K.A. Goodpasture	Sept 1984	55:3

Appendix I. (continued)

Migrant Article	Author	Date	Vol
Nashville, Tennessee Television Tower Casualties, 1984	K.A. Goodpasture	Sept 1986	57:3
1985 Tower Casualties at WSMV, Nashville, Tennessee	K.A. Goodpasture	Sept 1987	58:3
An Improbable Number of Yellow-billed Cuckoo Casualties at a Tennessee TV Tower	Paul B. Hamel	Sept 1987	58:3
Highland Rim and Basin Region Season Report: Red-shafted form of Northern Flicker at WSMV	David F. Vogt	Mar 1989	60:1
IN MEMORANDUM: KATHERINE A. GOODPASTURE, 1909-1995	Ann T. Tarbell	Dec 1996	67:4
A Study of Bird Mortality at Nashville's WSMV Television Tower	Jenny Nehring and Sandy Bivens	Mar 1999	70:1

Appendix II. Compilation of Bird Casualty Collectors, 1960-1989, listed in chronological order

Will Hon and Personnel of the Tennessee Game and Fish Commission, Amelia Laskey, Mr. Laskey, H.E. Parmer, Alan R. Munro, J.C. Ogden, Clara Fentress, Katherine A. Goodpasture, H.C. Monk, Mike Bierly, Mr. and Mrs. Robert Sharp and their children, A.F. Ganier, Clyde Anderson, Mr. and Mrs. W.E. Fentress, Jimmie Parrish, John Riggins, L.O. Trabue, David Lee, George Miller, Pauline Miller, Heather Riggins, Virginia Price, Margaret Mann, Ann Nichols, Ann Tarbell, Frances Abernathy, William Finch, Earl Henry, Louise Jackson, Marjorie Patrick, Ann Arnett, Sue Bell, Portia Macmillian, Milbrey Dugger, Oscar Patrick, Miriam Weinstein, Joe Ivie, Jan Alexander, Sandy Bivens, Joe McLaughlin, Ellen Stringer, David Vogt, Ann Houk, Paul Hamel, Patrick Hamel, Pandy English.

2015 TENNESSEE FALL BIRD COUNTS

Compiled by Ron Hoff
282 Hackworth Ln.
Clinton, TN 37716

There were 10 Fall Bird Counts conducted this year. Observers logged just over 438 party hours in the field to locate 43,408 individuals. These data represent 196 species, the highest species total for the past 8 years. No major weather events affected the counts this year, although some counts had fairly windy conditions. Temperatures ranged from 52° F in Elizabethton to 91° F in Blount County.

Northern Pintail, Hooded Merganser, Sandhill Crane, American Avocet, Willet, Short-billed Dowitcher and Chuck-will's Widow were all new to this year's state compilation, bringing the cumulative species total for the past 8 years to 244. Other highlights included Greater White-fronted Goose, Ruffed Grouse, Northern Saw-whet Owl, Scissor-tailed Flycatcher, Vesper Sparrow and Dickcissel. Loggerhead Shrikes continue to be scarce, with only 1 bird found again this year, this time in Loudon County.

COUNTY SUMMERIES

(F/Y = feeder/yard watcher)

Anderson County - 12 September; 0700-1500. Weather: cloudy to partly cloudy; wind 0-7 mph; 62-72° F. American Kestrel (hard to find in this county) and Golden-winged Warbler were notable finds. Observers: Doug Bruce, Melinda Fawver, Carole Gobert, Ron Hoff (compiler) and Dollyann Myers.

Blount County – 19 September; 0500-1910. Weather: partly cloudy to mostly sunny; 59-91° F. 4 Soras, 3 Olive-sided Flycatchers and an early Red-breasted Nuthatch are notable. Observers: Jean J. Alexander (compiler), Tiffany Beachy, Warren Bielenberg, Doug Bruce, Chuck Estes, Lola Estes, Melinda Fawver, Marian D. Fitzgerald, Tom E. Fitzgerald, Sandy B. Graves, Kim J. Henry, Stephen P. Henry, Thomas D. Howe, Susan Hoyle, James R. Human, David M. Johnson, Joan Marmon, Morton Massey, Karen J. Petrey, Doug Schneeberger, Paula Schneeberger and June D. Welch.

Elizabethton – 26 September; 0530-2200. Weather: cloudy with scattered showers, heavier in the mountains; wind 5-15 mph, up to 40 mph in the mountains; 52-70° F. Notable species include Willet, Forster's Tern, Black-billed Cuckoo, all 3 falcons, Olive-sided Flycatcher and Marsh Wren. Observers: Fred Alsop, Jim Anderson, Joshua Argo, Betty Bailey, Gary Bailey, Amy Berry, Jerry Bevins, Monica Black, Kevin Brooks, Gil Derouen, Glen Eller, Harry Lee Farthing, Bambi Fincher, Dave Gardener, Bill Grigsby, Paul Haynes, Reece Jamerson, Karen Justice, Rick Knight (compiler), Richard Lewis, Vern Maddux, Joe McGuiness, Cathy McNeil, Tom McNeil, Eric Middlemas, Charles Moore, Kathy Noblet, Rick Phillips, Brookie Potter, Jean Potter, Sherry Quillen, Peter Range, Brian Rovira, Chris Soto, Bryan Stevens, Kim Stroud, Gary Wallace and Rex Whitfield.

Humphrey's County - 19 September; 0530-1900. Weather: No details given. Ruben Stoll (compiler).

Knoxville – 27 September; 0530-1855. Weather: partly cloudy; wind 5-15 mph; 63-84° F. Count highlights include Northern Bobwhite, Sora, Fish Crow and Vesper Sparrow. Observers: Jean Alexander, Frank Bills, Sharon Bostick, Gail Clendenen, Steve Clendenen, K. Dean Edwards (compiler), Chuck Estes, Lola Estes, Carole Gobert, Paul Hartigan, Ron Hoff, Tom Howe, Susan Hoyle, James Human, David Johnson, Kristine Johnson, Tony King, Morton Massey, Stephanie McNew, Dollyann Myers, Denise Nauman, Charles P. Nicholson, John O'Barr, Martha Rudolph, Michael Ryon, Beth Schilling, Jay Sturner, Colin Sumrall, Jimmy Tucker and Chris Welsh.

Loudon County - 19 September; 0745-2000. Weather: clear to partly cloudy; wind 2-8 mph; 60-85° F. Northern Bobwhite and Loggerhead Shrike are of note. High numbers for Cattle Egrets and Ruby-throated Hummingbirds. Observers: Barbara Colaw, Linda Colburn, Stan Colburn, Cecilia Cruickshank, Chuck Cruickshank, Charlotte Jackson, Harry Jackson, Denise King, Tony King (compiler), Gary Lucas, Claire Manzo, Ralph Dimmick, Janet McKnight, Pat Patterson, Elton Pierce, Ellen Pyles, Tim Pyles, Mike Ryon, Sharon Sheliga, Mike Sullivan, Zse Zse Sullivan and Stan Wallace.

Montgomery County – 19 September; 0545-1215. Weather: mostly clear; wind 7-18 mph, with gusts to 23; 57-89° F. One person count at Fort Collins. Observer and compiler; Rick Shipkowski.

Nashville – 26 September; 0500-1700. Weather: mostly cloudy; wind 5 mph; 63-75° F. American Golden-Plover and Scissor-tailed Flycatcher are notable. Observers: Chris Agee, Jim Arnett, Sandy Bivens, Susan Bradfield, Trae Bradfield, David Buchanan, Jean Buchanan, Ed Byrne, Phillip Casteel, Richard Connors, Michael Doss, Jerry Drewry, Andres English, Bob English, Francis Fekel, William Fissell, Ed Gleaves, Mark Hackney, Barbara Harris, Kristin Hopkins, Bob Ingle, John Kell, Tony Lance, Andy Lantz, Camille Monohan, Amy Potter, Jan Shaw (Co-Compiler), Kathy Shaw, Shelia Shay, Chris Sloan, Chad Smith, Margaret Smith, Michael Smith, Joe Stone, Christy Valerio, Chloe Walker, Nolan Walker, Terry Witt, Mary Zimmerman, and Stephen Zipperer. Non-participating co-compiler: Scott Block.

Perry County - 26 September; 0530-? Weather: mostly cloudy all day with some light showers in the forenoon; 63-85° F. Observers: none submitted. Ruben Stoll (compiler).

Shelby County – 20 September; 0700-1800. Weather: partly cloudy; wind 6-14 and variable throughout the day; 63-83° F. Observers: Sheila Bentley, Betty Blaylock, David Blaylock, Chad Brown, Judy Dorsey, Bob Foehring, Vaibhav Garde, Rob Harbin, Van Harris, Margaret Jefferson, Lisa Jorgenson, Jo Kee, Hal Mitchell, Gaynell Perry, Dick Preston (compiler), Virginia Reynolds, Helen Steward, Ed Thomas, Jim Verner, Jim Waldron and Martha Waldron.

2015 Fall Bird Counts

Species	Anderson	Blount	Eliz	Humph	Knox	Loudon	Mont	Nashville	Perry	Shelby	Totals
Black-bellied Whistling-Duck	-	-	-	-	-	-	-	-	-	9	9
Greater White-fronted Goose	-	-	-	3	-	-	-	-	-	-	3
Canada Goose	15	67	1182	14	290	267	-	175	-	107	2117
Wood Duck	-	27	90	14	30	-	8	36	94	8	307
American Wigeon	-	-	1	-	-	-	-	-	-	-	1
Mallard	26	27	254	8	65	91	-	19	1	24	515
Blue-winged Teal	9	440	13	376	-	-	-	-	7	5	850
Northern Shoveler	-	-	-	21	-	-	-	-	-	37	58
Northern Pintail	-	-	-	1	-	-	-	-	-	-	1
Hooded Merganser	-	-	-	1	-	-	-	-	-	-	1
Northern Bobwhite	-	10	-	-	1	1	-	14	-	3	29
Ruffed Grouse	-	-	1	-	-	-	-	-	-	-	1
Wild Turkey	1	33	161	6	14	9	-	109	53	4	390
Pied-billed Grebe	3	3	9	-	7	1	-	-	-	4	27
Double-crested Cormorant	1	4	31	1103	22	104	-	62	32	8	1367
American White Pelican	-	-	-	31	-	-	-	-	-	71	102
Great Blue Heron	8	7	39	23	30	16	1	27	55	10	216
Great Egret	-	2	1	540	5	-	-	22	61	38	669
Cattle Egret	-	-	-	-	-	287	-	-	-	3	290
Green Heron	4	6	7	2	7	2	-	1	1	1	31
Black-crowned Night-Heron	-	1	4	-	-	7	-	3	-	-	15
Black Vulture	9	5	172	6	13	64	1	422	53	3	748
Turkey Vulture	28	28	189	55	22	26	14	128	171	8	669
Osprey	1	-	19	-	11	1	-	1	4	1	38
Mississippi Kite	-	-	-	-	-	-	-	-	-	3	3

	Anderson	Blount	Eliz	Humph	Knox	Loudon	Mont	Nashville	Perry	Shelby	Totals
Bald Eagle	2	2	8	4	1	2	-	2	12	1	34
Northern Harrier	-	1	1	2	-	-	-	1	1	-	6
Sharp-shinned Hawk	-	-	5	1	-	-	-	3	4	-	13
Cooper's Hawk	1	3	10	1	5	3	-	4	6	3	36
Accipiter sp.	-	-	-	-	-	-	-	2	-	-	2
Red-shouldered Hawk	4	6	3	9	10	1	2	4	21	13	73
Broad-winged Hawk	1	4	-	-	-	1	-	40	2	12	60
Red-tailed Hawk	3	10	16	4	7	4	-	19	10	7	80
Sora	-	4	4	18	1	-	-	-	2	-	29
American Coot	-	1	2	2	1	-	-	50	-	-	56
Sandhill Crane	-	-	-	-	-	-	-	-	1	-	1
Black-necked Stilt	-	-	-	-	-	-	-	-	-	6	6
American Avocet	-	-	-	-	-	-	-	-	-	1	1
American Golden-Plover	-	-	-	7	-	-	-	1	-	-	8
Semipalmated Plover	-	-	-	8	-	-	-	-	-	-	8
Killdeer	23	27	87	56	38	21	6	63	122	52	495
Spotted Sandpiper	3	-	3	-	-	2	-	-	2	-	10
Solitary Sandpiper	-	1	5	-	-	-	1	-	-	-	7
Greater Yellowlegs	-	-	-	10	-	-	-	-	2	1	13
Willet	-	-	1	-	-	-	-	-	-	-	1
Lesser Yellowlegs	-	-	-	48	-	-	-	-	7	-	55
Stilt Sandpiper	-	-	-	17	-	-	-	-	-	-	17
Sanderling	-	-	2	-	-	-	-	-	-	-	2
Least Sandpiper	5	-	1	5	-	-	-	-	12	1100	1123
Pectoral Sandpiper	-	-	-	4	-	-	1	1	-	3	9
Semipalmated Sandpiper	-	-	-	1	-	-	-	-	-	3	4
Short-billed Dowitcher	-	-	-	2	-	-	-	-	-	-	2

	Anderson	Blount	Eliz	Humph	Knox	Loudon	Mont	Nashville	Perry	Shelby	Totals
Wilson's Snipe	-	3	-	1	-	-	-	-	2	-	6
American Woodcock	-	-	1	-	-	-	-	-	1	-	2
Wilson's Phalarope	-	-	-	1	-	-	-	-	-	-	1
Phalarope sp.	-	-	-	1	-	-	-	-	-	-	1
Ring-billed Gull	-	-	4	5	-	-	-	-	2	-	11
Herring Gull	-	-	-	-	-	-	-	-	2	-	2
Caspian Tern	-	-	-	17	-	-	-	-	-	-	17
Common Tern	-	-	-	5	-	-	-	2	-	-	7
Forster's Tern	-	-	1	6	-	-	-	1	-	-	8
Rock Pigeon	222	90	375	10	282	252	-	48	10	158	1447
Eurasian Collared-Dove	-	2	5	11	-	18	1	35	4	8	84
Mourning Dove	66	230	529	102	229	237	30	151	198	285	2057
Yellow-billed Cuckoo	1	3	-	5	3	1	1	4	4	16	38
Black-billed Cuckoo	-	-	1	1	-	-	-	-	-	-	2
Cuckoo sp.	-	1	-	-	-	-	-	-	-	-	1
Eastern Screech Owl	-	2	27	3	6	-	-	6	6	-	50
Great Horned Owl	2	3	3	6	2	-	-	5	-	2	23
Barred Owl	4	1	1	12	-	-	4	4	13	3	42
Northern Saw-whet Owl	-	-	1	-	-	-	-	-	-	-	1
Common Nighthawk	-	-	-	-	12	-	-	5	-	3	20
Chuck-will's widow	-	-	-	-	-	-	-	-	1	-	1
Eastern Whip-poor-will	-	-	-	2	-	-	-	-	4	-	6
Chimney Swift	7	120	490	1	157	30	230	77	9	25	1146
Ruby-throated Hummingbird	24	43	36	13	16	112	13	19	28	28	332
Belted Kingfisher	5	6	33	5	26	8	-	15	22	4	124
Red-headed Woodpecker	-	2	1	10	-	-	2	6	11	15	47
Red-bellied Woodpecker	26	64	73	28	98	29	8	81	45	56	508

	Anderson	Blount	Eliz	Humph	Knox	Loudon	Mont	Nashville	Perry	Shelby	Totals
Yellow-bellied Sapsucker	-	1	1	-	-	-	-	1	2	-	5
Downy Woodpecker	12	35	53	15	51	10	1	48	26	39	290
Hairy Woodpecker	3	7	7	4	4	1	1	10	12	2	51
Northern Flicker	5	10	54	5	41	15	2	24	19	6	181
Pileated Woodpecker	4	26	28	10	8	4	6	16	38	16	156
American Kestrel	1	-	24	6	4	5	-	22	17	4	83
Merlin	-	-	2	1	-	-	-	-	-	-	3
Peregrine Falcon	-	2	1	-	-	-	-	-	3	-	6
Olive-sided Flycatcher	-	3	1	-	-	-	-	-	-	-	4
Eastern Wood-Pewee	8	21	14	35	15	8	9	31	34	45	220
Yellow-bellied Flycatcher	-	-	-	-	-	-	-	2	1	-	3
Acadian Flycatcher	-	-	2	1	-	1	-	1	1	28	34
Alder Flycatcher	-	-	-	-	-	-	-	-	1	-	1
"Traill's" ssp.	-	-	-	1	-	-	-	-	-	-	1
Willow Flycatcher	-	-	-	1	-	-	-	-	-	-	1
Least Flycatcher	-	1	-	-	-	-	1	-	1	1	4
Empidonax sp.	-	3	-	-	3	-	1	-	-	2	9
Eastern Phoebe	7	25	71	8	36	10	1	37	34	10	239
Great Crested Flycatcher	-	1	-	1	-	3	-	-	-	2	7
Eastern Kingbird	1	1	1	5	2	-	-	1	4	-	15
Scissor-tailed Flycatcher	-	-	-	-	-	-	-	3	-	-	3
Loggerhead Shrike	-	-	-	-	-	1	-	-	-	-	1
White-eyed Vireo	16	20	3	51	25	11	1	30	86	106	349
Yellow-throated Vireo	8	3	1	11	3	1	1	2	18	9	57

	Anderson	Blount	Eliz	Humph	Knox	Loudon	Mont	Nashville	Perry	Shelby	Totals
Blue-headed Vireo	-	9	6	-	-	-	-	-	-	-	15
Warbling Vireo	-	-	-	-	-	-	-	-	2	1	3
Philadelphia Vireo	-	-	-	1	1	-	-	2	7	5	16
Red-eyed Vireo	5	1	4	7	7	2	5	2	9	47	89
Blue Jay	64	221	432	56	414	154	29	270	698	68	2406
American Crow	67	255	896	151	382	70	10	238	698	56	2823
Fish Crow	-	-	-	-	5	-	-	-	1	-	6
Common Raven	-	-	8	-	-	-	-	-	-	-	8
Horned Lark	-	-	-	1	-	-	-	-	-	-	1
Tree Swallow	-	37	231	69	12	141	-	-	17	-	507
Northern Rough-winged Swallow	-	1	1	186	-	96	5	5	40	14	348
Purple Martin	-	-	-	1	-	1	1	-	-	-	3
Bank Swallow	-	-	-	4	-	-	-	-	-	-	4
Barn Swallow	-	1	-	8	-	14	-	12	120	12	167
Cliff Swallow	-	-	2	-	-	-	-	-	3	-	5
Carolina Chickadee	58	135	128	29	184	57	9	140	47	69	856
Tufted Titmouse	40	97	111	43	138	42	14	102	84	53	724
Red-breasted Nuthatch	-	1	1	-	-	-	-	-	-	-	2
White-breasted Nuthatch	25	31	43	11	40	17	2	50	10	22	251
Brown-headed Nuthatch	1	3	-	-	6	-	-	-	-	-	10
House Wren	-	2	6	1	2	-	-	2	2	-	15
Winter Wren	-	-	-	-	-	-	-	-	2	-	2
Sedge Wren	-	-	-	-	-	-	-	-	2	-	2
Marsh Wren	-	1	1	1	-	-	-	3	15	-	21

	Anderson	Blount	Eliz	Humph	Knox	Loudon	Mont	Nashville	Perry	Shelby	Totals
Carolina Wren	56	118	152	21	184	144	6	106	60	68	915
Blue-gray Gnatcatcher	3	4	2	16	1	1	-	6	5	3	41
Golden-crowned Kinglet	-	-	2	-	-	-	-	-	-	-	2
Ruby-crowned Kinglet	-	-	2	1	1	-	-	-	-	-	4
Eastern Bluebird	54	80	230	40	135	69	2	106	74	32	822
Veery	-	-	1	-	2	-	-	2	2	-	7
Gray-cheeked Thrush	1	1	1	3	5	-	1	5	20	-	37
Swainson's Thrush	1	4	23	9	23	-	2	25	29	19	135
Wood Thrush	4	7	12	6	3	2	-	2	15	4	55
American Robin	6	144	312	12	209	38	10	157	5	39	932
Gray Catbird	1	23	60	8	65	5	1	33	10	26	232
Brown Thrasher	4	28	19	12	38	3	-	35	15	5	159
Northern Mockingbird	9	60	76	17	131	61	-	67	26	35	482
European Starling	312	167	1347	267	564	814	57	294	207	783	4812
American Pipit	-	-	-	-	-	-	-	-	1	-	1
Cedar Waxwing	1	2	132	4	56	-	8	92	19	-	314
Ovenbird	-	-	2	-	1	1	-	3	8	-	15
Worm-eating Warbler	-	4	1	-	1	-	-	-	1	-	7
Northern Waterthrush	-	4	1	-	1	-	-	-	1	-	7
Golden-winged Warbler	1	-	-	5	-	-	-	1	6	-	13
Blue-winged Warbler	-	-	-	2	-	-	-	6	1	5	14
Black-and-white Warbler	2	-	6	5	2	2	-	8	14	7	46
Prothonotary Warbler	-	-	-	-	-	-	-	-	-	1	1
Tennessee Warbler	3	4	12	64	26	1	1	27	141	26	305
Orange-crowned Warbler	2	-	-	-	3	-	-	-	1	-	6

	Anderson	Blount	Eliz	Humph	Knox	Loudon	Mont	Nashville	Perry	Shelby	Totals
Nashville Warbler	-	1	1	1	-	-	1	5	7	1	17
Mourning Warbler	-	-	-	1	-	-	-	-	1	-	2
Kentucky Warbler	-	-	-	-	-	-	-	-	1	2	3
Common Yellowthroat	3	21	25	36	29	2	2	31	62	3	214
Hooded Warbler	2	7	4	1	3	-	-	1	5	4	27
American Redstart	3	15	51	10	20	3	3	37	9	20	171
Cape May Warbler	-	1	8	1	4	1	-	-	-	-	15
Northern Parula	3	3	2	15	3	2	-	9	23	61	121
Magnolia Warbler	5	16	24	8	39	4	3	72	59	26	256
Bay-breasted Warbler	-	1	8	1	4	2	-	3	13	-	32
Blackburnian Warbler	1	1	7	1	5	-	1	5	4	1	26
Yellow Warbler	-	-	-	6	-	-	-	3	-	-	9
Chestnut-sided Warbler	5	9	7	7	9	-	1	4	32	12	86
Blackpoll Warbler	-	1	-	1	-	-	-	-	-	-	2
Black-throated Blue Warbler	-	-	2	-	1	-	-	-	-	-	3
Palm Warbler	-	7	54	-	17	1	-	5	3	2	89
Pine Warbler	2	4	2	2	20	2	-	-	9	2	43
Yellow-rumped Warbler	-	1	-	-	-	-	-	4	7	-	12
Yellow-throated Warbler	2	4	1	7	1	-	2	3	6	3	29
Prairie Warbler	-	-	-	11	-	-	-	1	-	-	12
Black-throated Green Warbler	-	8	4	2	1	-	1	15	3	5	39
Canada Warbler	-	1	-	1	-	-	-	-	-	-	2
Wilson's Warbler	-	-	-	1	-	-	-	3	1	-	5
Yellow-breasted Chat	-	4	1	2	-	-	1	-	5	-	13

	Anderson	Blount	Eliz	Humph	Knox	Loudon	Mont	Nashville	Perry	Shelby	Totals
Eastern Towhee	4	18	59	11	47	7	-	41	13	5	205
Chipping Sparrow	11	31	37	50	21	10	-	26	93	12	291
Field Sparrow	4	26	14	32	14	10	1	54	25	-	180
Vesper Sparrow	-	-	-	-	1	-	-	-	-	-	1
Savannah Sparrow	-	-	-	2	9	-	-	-	2	-	13
Song Sparrow	6	15	99	-	58	2	-	10	-	-	190
Lincoln's Sparrow	-	-	-	-	-	-	-	-	3	-	3
Swamp Sparrow	-	-	-	-	-	-	-	-	5	-	5
Dark-eyed Junco	-	-	31	-	-	-	-	-	-	-	31
Summer Tanager	4	1	-	1	6	1	6	15	52	19	105
Scarlet Tanager	5	12	16	14	14	4	-	5	44	4	118
Northern Cardinal	40	154	188	73	207	80	17	200	114	92	1165
Rose-breasted Grosbeak	-	3	28	2	12	-	1	3	58	34	141
Blue Grosbeak	-	5	1	5	1	3	-	6	13	4	38
Indigo Bunting	-	41	25	150	124	4	13	40	348	19	764
Dickcissel	-	-	-	-	-	-	-	-	-	2	2
Bobolink	-	-	-	-	3	-	-	-	-	-	3
Red-winged Blackbird	-	10	60	74	195	-	-	49	2	45	435
Eastern Meadowlark	2	3	41	1	11	11	-	40	35	2	146
Common Grackle	-	424	67	5	103	12	179	21	-	12	823
Brown-headed Cowbird	-	4	15	2	56	128	-	26	-	15	246
Baltimore Oriole	1	-	3	-	1	-	-	-	-	1	6
House Finch	11	36	55	-	144	22	9	48	6	8	339
American Goldfinch	20	118	188	10	96	55	16	55	55	22	635
House Sparrow	11	14	56	16	33	35	2	9	114	42	332

	Anderson	Blount	Eliz	Humph	Knox	Loudon	Mont	Nashville	Perry	Shelby	Totals
Total individuals	1434	3913	9612	4427	5557	3803	769	4546	5045	4302	43408
Total species	82	115	129	138	107	85	61	115	132	109	196
Observers	5	21	38	6	30	22	1	40	8	21	192
Parties	3	12	9	3	16	17	1	12	5	8	86
Party hours	17.95	63.83	84	21	74.98	40.25	6.5	53.25	43	33.75	438.51
Hours by car	6.75	15.58	-	12	21.65	28.25	1	20.75	23	11	139.98
Hours by foot	11.2	48.75	-	9	53.33	12	5.5	32.5	20	22.75	215.03
Hours by boat or other	-	-	-	-	-	-	-	-	-	-	-
Miles by car	75.3	187.5	-	28	236	265	13.2	333	84	92.5	1314.5
Miles by foot	10.57	25.85	-	5	35.05	12	3.5	23	19	15.25	149.22
Miles by canoe or other	-	-	-	-	-	-	-	-	-	-	-
Hours owling	-	1.33	6	1	1.75	0	0.5	2.5	2	0.75	15.83
Miles owling	-	0	-	-	15	0	0.5	13	-	0.5	29
Feeder/yard watch observers	2	8	-	-	-	13	1	-	-	-	24
Feeder/yard watch hours	1	4.75	-	-	6.5	15.25	2	-	-	-	29.5

MINUTES OF THE FALL BOARD OF DIRECTORS MEETING

3 October 2015
Nashville, Tennessee

The annual fall meeting was held 2-4 October in Nashville, Tennessee and hosted by the Nashville Chapter. Field trips were offered to Bells Bend, Radnor Lake, and Basin Spring.

The meeting of the Board of Directors was held at Warner Parks Nature Center and was called to order by President Steve Routledge at 1:47 pm. Secretary Cyndi Routledge determined a quorum was met. Minutes of the Spring 2015 meeting were approved as read.

REPORTS OF OFFICERS AND DIRECTORS-AT-LARGE

Vice President: Rack Cross (East TN) stated that our newest chapter, Birding Kingsport, is interested in hosting one of the upcoming TOS spring or fall meetings.

Treasurer: Mac McWhirter gave a brief treasurer's report centered primarily upon the performance of the Society's investments in 2015. The market value of our fund at Vanguard is currently $307,000 compared to $312,000 at the beginning of the calendar year, a decline of approximately 1.6%, less than half the decline of traditionally balanced portfolios. In this volatile market, our investments seem to be weathering the bear market well due to diversity of holdings and defensive positioning.

With all the 2013 and half the 2014 issues of *The Migrant* now published, the costs of getting the issues caught up is well under expected budget. Income and expenses for 2015 are tracking as expected.

The Migrant: Associate Editor Susan McWhirter reported that the September 2014 issue is being printed, and the December 2014 issue is in layout and should be published by Christmas. The 2015 100th Anniversary issues will replicate a historical cover, with the June issue containing mainly pictures and history from the 100th Anniversary Celebration May meeting.

The Tennessee Warbler: Editor Theresa Graham announced the due date for submissions for the next issue is 31 October.

COMMITTEE REPORTS

Tennessee Bird Records: Kevin Calhoon, Secretary, reported that the most recent voting results were announced on TN-birds and will be published in *The Migrant;* one vote is pending. Mark Greene, Mike Todd, and Kevin Calhoon will rotate off the committee after this vote is completed. Chris Sloan, Daniel Jacobson, and Phillip Casteel remain, and alternate David Kirschke will move full membership. The committee proposes Terry Witt, Ron Hoff and Ruben Stoll fill the vacated full and alternate positions. The new secretary will be chosen by the committee members.

Conservation Policy: President Steve Routledge reported on behalf of the committee

that TOS has officially supported the following initiatives since the spring meeting: NPS Wildlife Protection Buffer along the Outer Banks of N.C. to protect Piping Plover nest sites; Climate Advisors, which halted conversion of southern forests for fossil fuels; Tennessee Wilderness Act that would protect 19,556 acres within Cherokee National Forest; American Bird Conservancy's work to end pipe-induced wildlife mortality on public lands; passage of the Safe Bird Act through the Tennessee State Legislature; and the Migratory Bird Treaty Act extension. They also asked TVA not to close their ash ponds across the state.

OLD BUSINESS

International Crane Foundation: An anonymous donation of $10,000 dollars made to the Knoxville Chapter's J. B. Owens Fund was turned over to TOS with instructions for this to be donated to The International Crane Foundation's (ICF) new campaign initiative "Keeping Whooping Cranes Safe". This campaign will build programs to help stop needless killing of Whooping Cranes. Lizzie Condon of the ICF was presented with the donation, and she gave a brief presentation on ICF and the status of Whooping Cranes in North America.

Mac McWhirter made a motion that TOS donate $500 to Operation Migration's 2015 campaign and an additional $500 to "Keeping Whooping Cranes Safe"; passed unanimously.

TVA Windfall Funds: Cyndi Routledge reported that in June the committee gave a list of five recommendations to TWRA for the use of this one-time funding. David Hanni, Bird Conservation Coordinator with TWRA, contacted the committee and said that $25,000 would be spent on signage for Tennessee's 338 designated Birding Trails. The signs will be brown with an Eastern Bluebird logo similar to the one on the Watchable Wildlife state license plate. The committee continues to receive ideas and requests for these funds. Rick Blanton made a motion that the committee continue to develop a "wish list" of priorities should other funds be available in the future; passed unanimously.

The committee members are Steve Routledge, Cyndi Routledge, Dick Preston, and Rick Blanton.

Discover Birds Activity Books: Cyndi Routledge reported that to date we have supplied books to over 14,000 children in 9 states and 3 countries. The book inventory is down to about 4200 books. She expressed concern that we will run out of books by the end of the school year, and there currently are no funds for another printing. Tony King made a motion that TOS continue to support the Discover Birds Activity Books; passed unanimously.

Mac McWhirter made a motion that before the Spring meeting we explore the possibility of a cooperative effort for a funding partnership; passed unanimously.

NEW BUSINESS

Ron Hoff asked that anyone having materials appropriate for the TOS archives post this on our web site. He also asked members to consider a central location where these archives could be housed and thus be made accessible to all members.

President Steve Routledge recognized and formally welcomed the new Fred J. Alsop – Birding Kingsport Chapter. He also announced plans for the winter meeting to be held at Wheeler Wildlife Refuge in Alabama 23-25 January. More information will be available in the next edition of *The Tennessee Warbler.*

Memphis Chapter president Kate Friedman announced that the 2016 Spring meeting will be held at Reelfoot Lake 6-8 May 2016, with the Memphis Chapter hosting.

It was announced that the new TOS logo is officially registered with the State of Tennessee for the next five years.

Treasurer Mac McWhirter reminded members to contact him with their email address so they can receive *The Tennessee Warbler* as it will soon be available electronically.

President Steve Routledge reported that Bob Ford, editor of *The Migrant* has an original wood block done by HP Ijams for a 1936 cover of The Migrant. As per discussion at an earlier meeting, The Ijams Center in Knoxville was contacted, and the wood block will be donated to them for display with the stipulation that it be returned to TOS should the center cease operation.

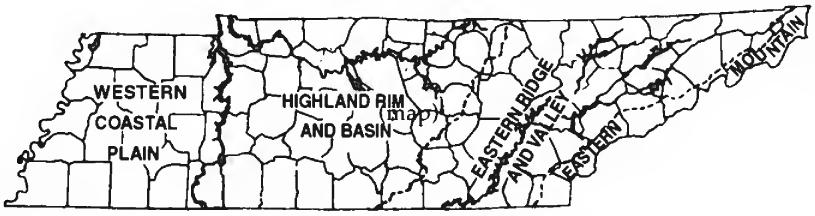
Motion was made by Rack Cross to adjourn the meeting; passed unanimously.

Respectfully submitted,

Cyndi Routledge, Secretary

THE SUMMER SEASON

Richard L. Knight, Editor



1 June - 31 July 2015

Among several notable waterfowl reports were the first Black-bellied Whistling-Ducks in East Tennessee and the first summer occurrence in the state of Cackling Goose. Also, three reports of female Common Mergansers in East Tennessee represent the first modern summer records in the state; the species nested in Smith County in the 1890s. Numbers of summering American White Pelicans continue to increase in West Tennessee. Two sightings of Swallow-tailed Kite in June were likely spring overshoots; most sightings in the state occur in August. The widespread dispersal of White-winged Doves continues with two reports this summer. A Rufous Hummingbird in mid-July apparently was the earliest ever arrival in the state. Localized populations continue for Western Kingbird and Painted Bunting in Shelby County; Bell's Vireo and Bachman's Sparrow at Fort Campbell; and Yellow-bellied Sapsucker, Hermit Thrush and Magnolia Warbler in the eastern mountains. These and other notable sightings are detailed in the reports below.

Standard Abbreviations

ad - adult
Co - County
Cr - Creek
ers - earliest reported sighting
et al. - and others
fide - reported by
im - immature
L - Lake
max - maximum count
m.ob. - many observers
Mtn - Mountain
R - River
SP - State Park
WMA - Wildlife Management Area
yg - young

WESTERN COASTAL PLAIN REGION - - The summer season was marked by slightly below average temperatures in June, while July set several daily temperature records toward the end of the month. Memphis had its 15th hottest July on record, with the mean temperature nearly two degrees above normal. Rainfall was well below average in June and slightly above normal in July, although most of the monthly total fell during the 4th of July weekend.

With the high temperatures and strength-sapping humidity, reports were few and far between as birders opted for air conditioning rather than field trips. However, highlights include Black-billed Cuckoo in Lauderdale County, Swallow-tailed Kite at the Gibson / Weakley County line, Piping Plover in Dyer County, and a pair of Scissor-tailed Flycatchers in Hardin County.

Duck - Kite: **Black-bellied Whistling-Duck**: 7 Jul (53, including a brood of 4 yg) Ensley (JJW); 20 Jul (1) Union City, Obion Co (Kacey King, photo). **Northern Shoveler**: 7 Jul (2) Ensley (JJW). **Double-crested Cormorant** and **Anhinga**: the large heron rookery at Macedonia Bottoms in Gibson Co that also hosted these two species (see Spring report) was found to be abandoned on 18 Jun, possibly due to Fish Crow predation (MAG). **American White Pelican**: 18 Jun (10) Moss Island WMA, Dyer Co (MAG); 26 Jun (103) White's L, Dyer Co (DDP); 7 Jul (16) Hwy 70 at Hatchie R, Haywood Co (Bob Ford); 29 Jul (7) Mississippi R, Lake Co (MAG); 29 Jul (15) Ernest Rice WMA (MAG). **Great Egret**: 29 Jul (450) Ernest Rice WMA (MAG), max. **Snowy Egret**: 29 Jul (56) Ernest Rice WMA (MAG), max. **Little Blue Heron**: 29 Jul (45) Ernest Rice WMA (MAG), max. **Swallow-tailed Kite**: 16 Jun (1) Maness Swamp Refuge, at Gibson / Weakley Co line (MAG). **Mississippi Kite**: 26-28 Jun (1-2) Paris, Henry Co (Shawna Ellis).

Stilt - Tern: **Black-necked Stilt**: 7 Jul (29, including a pair with 3 yg) Ensley (JJW); 29 / 31 Jul (4 / 15) Great River Rd (MAG). **Black-bellied Plover**: 31 Jul (1) Great River Rd (MAG). **Piping Plover**: 29 / 31 Jul (1) Ernest Rice WMA (MAG). **Stilt Sandpiper**: 19 Jul (1) Ensley (RS), ers. **Sanderling**: 19 Jul (1) Mississippi R, Lake Co (RS); 20-31 Jul (2-4) Ernest Rice WMA (DDP, MAG). **Least Sandpiper**: 30 Jun (4) TVA Lake, Shelby Co (JJW), ers. **Pectoral Sandpiper**: 31 Jul (1200+) Great River Rd (MAG), max. **Western Sandpiper**: 19 Jul (3) Ensley (RS), ers. **Short-billed Dowitcher**: 31 Jul (1) Great River Rd (MAG). **Wilson's Phalarope**: 31 Jul (1) Great River Rd (MAG). **Least Tern**: 30 Jun (61, including 3 on nests) TVA Lake, Shelby Co (JJW), with a max of 72 present on 30 Jul (SNM, Martha Waldron). **Caspian Tern**: 11 Jul (22) Ensley (Betty Sue Dunn).

Cuckoo - Bunting: **Black-billed Cuckoo**: 18 Jun (1-2) Chisholm L, Lauderdale Co (MAG). **Chuck-will's-widow**: 22 Jun (1) Moss Island WMA, Dyer Co (DDP). **Peregrine Falcon**: 30 Jul (1) Trenton, Gibson Co (MAG). **Willow Flycatcher**: 7 Jun (1) Wolf River WMA, Fayette Co (RDH, DMy). **Western Kingbird**: thru period (nesting) Ensley and President's Island (m.ob.). **Scissor-tailed Flycatcher**: 20 Jun (pair) Pickwick Dam, Hardin Co (Gaynell Perry); 6 Jul (1 ad, 2 im) President's Island (Gaynell Perry). **Lark Sparrow**: 12 Jun (1) Wolf River WMA, Fayette Co (DDP). **Scarlet Tanager**: 13 Jun (1) William B. Clark State Natural Area, Fayette Co (Rob Harbin, Hal Mitchell); 18 Jun (1) Chickasaw NWR, Lauderdale Co (MAG). **Painted Bunting**: 30 Jun (2 males, 1 female) Ensley (JJW).

Locations: Ensley - Shelby Co; Ernest Rice WMA, Dyer Co; Great River Rd, Dyer Co; President's Island, Shelby Co.

DICK D. PRESTON, 261 Sassafras Circle, Munford, TN 38058.
dickpreston@rittermail.com

HIGHLAND RIM AND BASIN REGION - - Temperatures in Middle Tennessee were above average by 2.2 degrees in June and 1.4 degrees in July. Rainfall for June was slightly below normal, but July was very wet with 3.4 inches more rain than normal. Highlights include both Swallow-tailed and Mississippi Kites. A White-winged Dove was observed at a feeder for several days. A Rufous Hummingbird was banded in July.

Duck - Kite: **Black-bellied Whistling-Duck**: 14 Jun (2) Duck R Unit (CF). **Blue-winged Teal**: 4 Jun (1) Lincoln Co (RDH, DMy). **Northern Bobwhite**: 4 / 5 Jun (29 / 22) Fort Campbell, Montgomery and Stewart Co portions, respectively, (DMo). **American White Pelican**: 23-30 Jul (125) Duck R Unit (RS, AT). **Snowy Egret**: 9 Jun / 25 Jul (1 / 3) Duck R Unit (CF / RS, AT). **Little Blue Heron**: 9 Jul (1) L Taal, Montgomery Co (Sharon Arnold). **Cattle Egret**: 25 Jul (30) Duck R Unit (RS, AT). **Swallow-tailed Kite**: 11 Jun (1) Coffee Co (Dale Swant). **Mississippi Kite**: 10 Jul (3) Clarksville, Montgomery Co (fide Stefan Woltmann); 28 Jul (1) Duck R Unit (RS).

Stilt - Hummingbird: **Black-necked Stilt**: 25 Jul (5) Duck R Unit (RS, AT). **American Avocet**: 30 Jul (1) Duck R Unit (RS, AT). **Semipalmated Plover**: 30 Jul (7) Duck R Unit (RS, AT), ers. **Stilt Sandpiper**: 25 Jul (3) Duck R Unit (RS, AT), ers. **Short-billed Dowitcher**: 25 Jul (1) Duck R Unit (RS, AT). **American Woodcock**: 2 Jun (1) Fort Campbell (DMo). **Laughing Gull**: 30 Jul (1 im) Duck R Unit (RS, AT). **Ring-billed Gull**: 23-30 Jul (1-20) Duck R Unit (RS, AT). **Caspian Tern**: 23-30 Jul (8-40+) Duck R Unit (RS, AT). **Black Tern**: 23-30 Jul (2-9) Duck RUnit (RS, AT). **White-winged Dove**: 24-27 Jul (1) Dover, Stewart Co (Patsy Butcher, photo), at feeder. **Barn Owl**: 5 Jun (2 ad, 3 im) Bridgestone-Firestone WMA (Chris Agee). **Rufous Hummingbird**: 19 Jul (1 male, banded) Warner Park, Davidson Co (Heather Gallagher).

Flycatcher - Warbler: **Willow Flycatcher**: 4 Jun (5) Fort Campbell (DMo). **Scissor-tailed Flycatcher**: 3 Jun (1) Perry Co (RS); mid Jul (1) Murfreesboro, Rutherford Co (Kristy Baker). **Loggerhead Shrike**: 4 / 25 Jun (2 / 1) separate White Co sites (EKL). **Bell's Vireo**: 4 Jun / 7 Jul (1) Fort Campbell (DMo); 22 Jun (4) Fort Campbell, Stewart Co portion (DMo). **Brown-headed Nuthatch**: 6 Jun (1) Bridgestone - Firestone WMA (EKL). **Veery**: 5 Jun (1) Beaman Park, Davidson Co (Stefan Woltmann), late. **Mourning Warbler**: 2 Jun (1) Fort Campbell (DMo), lrs. **Cerulean Warbler**: 14 / 20 Jun (1 each at separate sites) Montgomery Co (Steve Routledge, Cyndi Routledge). **Yellow Warbler**: 4 Jun (1) Fort Campbell (DMo); 11 Jun (1) Bedford L, Bedford Co (Stephen Zipperer); 11 Jun (1) marsh on Walter S. Davis Blvd., Nashville (Frank Fekel).

Sparrow - Finch: **Bachman's Sparrow**: 5 Jun (2) Fort Campbell, Stewart Co portion (DMo); 10 Jun - 27 Jul (1-2) Fort Campbell (DMo). **Grasshopper Sparrow**: 5 Jun (16) Fort Campbell, Stewart Co portion (DMo), max. **Henslow's Sparrow**: 1 / 6 Jun (4 / 5) Bridgestone - Firestone WMA (EKL); 2 Jun - 7 Jul (8-13) Fort Campbell (DMo); 5 Jun (10) Fort Campbell, Stewart Co portion (DMo); 14 Jun (1) Muddy Pond Rd / Hwy 62, Putnam Co (Stephen Zipperer). **White-throated Sparrow**: 7-27 Jun (1) Clarksville, Montgomery Co (Nita Heilman); 26 Jun (1) Nashville (Danny Shelton, photo). **Dickcissel**: 4 Jun (19) Fort Campbell (DMo). **Bobolink**: 3 Jun (1) Duck R Unit (CF), lrs. **Purple Finch**: 13 Jun (1) Cookeville, Putnam Co (Stephen J. Stedman), very late.

Locations: Bridgestone - Firestone WMA, White Co; Duck R Unit, Humphreys Co; Fort Campbell, Montgomery Co (unless specified otherwise).

STEPHEN C. ZIPPERER, 3105 Chapel Hills Drive, Murfreesboro, TN 37129
stczipperer@aol.com

CUMBERLAND PLATEAU/RIDGE and VALLEY REGION - - Both months experienced above- average temperatures. June was considerably drier than usual; however, excess rain in July made up the shortfall. Unexpectedly, waterfowl provided some of the highlights this summer. Among these were the first Black-bellied Whistling-Ducks for East Tennessee, the state's first summer report of Cackling Goose, and a lingering Common Merganser. Long-legged waders were notably late in the season. Notable for East Tennesse were individual Black-necked Stilt and White-winged Dove, along with an out-of-range Fish Crow.

Waterfowl: **Black-bellied Whistling-Duck**: 9 Jun (20) John Sevier L (Gary Loucks, photo, fide Scott Somershoe), first East TN record. **Cackling Goose**: 10-21 Jul (1) Middlebrook L, Sullivan Co (RMC, m.ob., photo), first summer record in state. **American Wigeon**: lingering from Mar thru Aug (1 female) Washington Co (RLK, m.ob.), although there are 4 previous one-day summer records in northeast TN, this was the first over-summering record in that area. **Blue-winged Teal**: 10 Jun (1 male) Hamilton Co (DRJ). **Ring-necked Duck**: thru Jun and into Aug (1 male) Greene Co (Nata Jackson). **Lesser Scaup**: 26 Jul (1 male) Marion Co (Tommie Rogers). **Common Merganser**: 10 Jul (1 female) Boone L, Sullivan Co portion (RMC), lingering since winter.

Bittern - Ibis: **Least Bittern**: 18 Jul (1) John Sevier L (SHu). **Great Egret**: 8 Jul (14) Kingsport, Sullivan Co (GDE); 18 Jul (25) John Sevier L (SHu); good numbers in these locations. **Snowy Egret**: 23-29 Jul (2) Brainerd Levee (Tim Jeffers, m.ob.). **Little Blue Heron**: 27 Jun - 29 Jul (1-3 im) Brainerd Levee (Libby Wolfe, m.ob.); 24 Jul (3 im) Swan Pond Rec Area, Roane Co (EKL). **Cattle Egret**:16 Jun (25) Rhea Co (Charles Murray, Hugh Barger); 24 Jul (2-3 ad, 7-8 yg) Lakeshore Park, Roane Co (EKL), nesting in mixed heronry. **Black-crowned Night-Heron**: 2 / 8 Jul (2) Greene Co (Nata Jackson). **Yellow-crowned Night-Heron**: 27 Jun - 29 Jul (1) Brainerd Levee (Libby Wolfe, m.ob.); 2 Jul (1) Blount Co (Tom Howe); 8 Jul (1) Bristol, Sullivan Co (RMC); 20 Jul (8) Kingsport, Sullivan Co (RLK). **White Ibis**: 25 Jun - 3 Jul (1 im) Brainerd Levee (DRJ, m.ob.); 10 Jul (1 im) Paddle Cr pond, Sullivan Co (JWC).

Coot - Falcon: **American Coot**: thru season (1) Middlebrook L, Sullivan Co (Kevin Blaylock, m.ob.); 30 Jun thru season (1) John Sevier L (SHu); 8 Jul (1) Eagle Bend fish hatchery, Anderson Co (RDH, DMy). **Black-necked Stilt**: 4 Jun (1) Greene Co (Nata Jackson, photo). **Pectoral Sandpiper**: 29 Jul (1) Hamilton Co (DRJ), ers. **WHITE-WINGED DOVE**: 24 Jul (1) Knox Co (James Tucker). **Barn Owl**: 15-20 Jul (3) Paddle Cr, Sullivan Co (Roy Knispel, JWC, m.ob.). **Peregrine Falcon**: 9 Jun (1 im) Conklin, Washington Co (Fred Alsop).

Passerines: **Scissor-tailed Flycatcher**: 6 Jun (1) White Co (Steve and Gail Clendenen);

thru season (pair nesting) South Pittsburg, Marion Co (fide Kevin Calhoon); 11 Jul (8, including 1 on nest and 1 carrying nest material) Bledsoe Co (SNM et al.). **Loggerhead Shrike**: 4 Jun (1 ad, 2 yg) Loudon Co (Steve and Gail Clendenen). **Fish Crow**: 7 Jul (1) Johnson City, Washington Co (RLK), ID by distinctive "unh-uh" calls, first report east of the Knoxville area. **Blue-winged Warbler**: 4 Jun (1 male) Walden's Ridge, Hamilton Co (Tommie Rogers), possible breeder in pine plantation; 27 Jul (1) Lookout Mtn, Hamilton Co (Bruce Dralle), migrant. **Swainson's Warbler**: 17 Jun (1) Cove Lake SP, Campbell Co (Nell Moore). **Cerulean Warbler**: 23 Jul (6) Lookout Mtn, Hamilton Co (Bruce Dralle), migrants. **Savannah Sparrow**: 2 / 17 Jun (1 each at separate sites) Washington Co (RLK). **Dickcissel**: 17 / 20 Jun (1) Leesburg, Washington Co (RLK), but absent from other regular sites in the county; 24 Jun - 8 Jul (pair) Seven Islands SP, Knox Co (Morton Massey, m.ob.); 11 Jul (1) Bledsoe Co (SNM et al.).

Locations: Brainerd Levee, Hamilton Co; John Sevier L, Hawkins Co.

RICHARD L. KNIGHT, 804 North Hills Drive, Johnson City, TN 37604
rknight8@earthlink.net

EASTERN MOUNTAIN REGION - - The summer was hotter than normal, with temperatures in June 3.7 degrees above average and in July 1.9 degrees above average. Rainfall was near normal for the period. Two different summering records of Common Merganser were very unusual.

Duck - Eagle: **Ring-necked Duck**: 6 Jun (1) Erwin, Unicoi Co (JHM et al.). **Common Merganser**: 7-15 Jun (1-2, female-type) Watauga R (Adam Campbell, photo), continuing from Apr and May; 5 Jul (1 female-type) South Holston R weir, Sullivan Co (Don Carrier, MWS, photo); 18 Jul (1 female-type) South Holston R, Sullivan Co (JWC); latter two reports likely represent the same bird. **Common Loon**: 2-16 Jun (1-2) Parksville L, Polk Co (Rick Houlk, m.ob.); 13-24 Jun (1) Wilbur L, Carter Co (Brookie Potter and Jean Potter). **Pied-billed Grebe**: 12 Jun (1) Parksville L, Polk Co (RDH, DMy); 10 Jul (1) South Holston R, Sullivan Co (RLK). **Great Egret**: 18 Jul (1) Shady Valley (MWS), rare at this site. **Little Blue Heron**: 12-15 Jul (1 im) Holston Valley, Sullivan Co (JWC, m.ob.). **Black-crowned Night-Heron**: 17 / 28 Jul (1) South Holston L (MWS / JWC). **Yellow-crowned Night-Heron**: thru 15 Jun (3 yg in nest) Watauga R (m.ob.). **Osprey**: 23 Jun (1) Elizabethton (RBB). **Bald Eagle**: 25 Jun (1) Cosby, Cocke Co (Matt Wangerin).

Gull - Falcon: **Ring-billed Gull**: 6 Jun (1) South Holston L (Josh Stevenson). **Caspian Tern**: 18 Jul (2) South Holston L (JWC). **Common Tern**: 18 Jul (8) South Holston L (JWC). **Forster's Tern**: 31 Jul (6) South Holston L (MWS). **Mourning Dove**: 13 / 23 Jun (2) Carver's Gap, Roan Mtn (RLK), unusual at high elevation. **Red-headed Woodpecker**: 27 Jun (2 ad feeding 1 fledged yg) Cades Cove, GSMNP (Warren Bielenberg), apparently first breeding record at this site. **Yellow-bellied Sapsucker**: 6 Jun (1) Unaka Mtn (GDE, PGR, RPL); early Jun (2) George's Cr, Carter Co (JHM); 13-23 Jun / 10 Jul (1 ad / 2 im) Roan Mtn, at 4450 ft elevation (RLK). **Peregrine Falcon**: 14 Jun / 25 Jul (1-2) Alum Cave Bluff, GSMNP (Keith Watson et al. / Josh Stevenson).

Flycatcher - Thrush: **Alder Flycatcher**: thru season (4-6) Roan Mtn (m.ob.). **Willow Flycatcher**: 10 Jun (6) Orchard Bog in Shady Valley (RLK), max. **Warbling Vireo**: 6 Jun (2) Buffalo Valley, Unicoi Co (JHM et al.). **Cliff Swallow**: 10 Jun (1) Shady Valley (RLK), unusual at this site. **Red-breasted Nuthatch**: 6 Jun (1) Dogwood Bench on Holston Mtn, Sullivan Co (RBB, RMC), in pines at 2800 ft. **Brown Creeper**: 13 Jun (3) Walnut Mtn, Carter Co (Tom McNeil, RBB, RMC). **Hermit Thrush**: 6 / 22 Jun (2 / 5) Unaka Mtn (RPL, Richard Blanton / RLK); thru season (1-4) Roan Mtn (RLK); 21 Jun (2) Clingman's Dome, GSMNP (Jason Sturner).

Warbler - Siskin: **Swainson's Warbler**: 6 Jun (5) Hurricane Gap Rd and Viking Mtn Rd, Greene Co (Marilyn Westphal, Marcus Simpson). **Magnolia Warbler**: 17 May - 22 Jun (1-8 males) Unaka Mtn (David Kirschke, GDE, m.ob.); 8-23 Jun (1-4 males) Roan Mtn (RLK, m.ob.). **Blackburnian Warbler**: 6 Jun (3) Unaka Mtn (GDE, PGR, RPL). **Yellow-rumped Warbler**: 25 Jun (1 male) Roan Mtn (Bates Estabrooks). **Vesper Sparrow**: 8 Jun thru season (1-4) Round Bald on Roan Mtn (RLK, m.ob.). **Orchard Oriole**: 14 May - 11 Jun (1) Shady Valley (John Shumate), unusual at this site. **Red Crossbill**: 4-6 Jun (15-25) Unaka Mtn (RLK, m.ob.); 8 Jun (2) Roan Mtn (RLK); 25 Jul (2+) Clingman's Dome, GSMNP (Josh Stevenson). **Pine Siskin**: 1 Jun / 25 Jul (5 / 10+) Clingman's Dome, GSMNP (Josh King / Josh Stevenson); thru 6 Jun (1) Erwin, Unicoi Co (Monica Black); 20 Jun (3) Roan Mtn, in spruce-fir (Simon Thompson); 23 Jun thru Jul (1-10) Roan Mtn, at 4450 ft elevation (Fred Alsop, RLK, m.ob.).

Locations: GSMNP - Great Smoky Mtns National Park; Roan Mtn - Carter Co; Shady Valley, Johnson Co; South Holston L, Sullivan Co; Unaka Mtn, Unicoi Co.

RICHARD P. LEWIS, 407 V.I. Ranch Road, Bristol, TN 37620
mountainbirds@gmail.com

OBSERVERS

RBB - Robert B. Biller
RMC - Ron M. Carrico
JWC - J. Wallace Coffey
GDE - Glen D. Eller
CF - Clayton Ferrell
MAG - Mark A. Greene
RDH - Ron D. Hoff
SHu - Susan Hubley
DRJ - Daniel R. Jacobson
RLK - Richard L. Knight
EKL - Edmund K. LeGrand
RPL - Richard P. Lewis
JHM - Joe H. McGuiness
SNM - Susan N. McWhirter
DMo - Daniel Moss
DMy - Dollyann Myers
DDP - Dick D. Preston
PGR - Peter G. Range
MWS - Mike W. Sanders
RS - Ruben Stoll
AT - Allan Troyer
JJW - John "Jay" Walko

SPECIAL INDEX TO VOLUME 86

A
Accipiter sp. 23, 71, 136
Anhinga 45, 47, 99, 103, 105, 148
Avocet, American 99, 101, 133, 136, 149

B
Bittern,
  American 101, 105
  Least 103, 105, 150
Blackbird,
  Brewer's 16, 17, 27, 34, 37, 103
  Red-winged 27, 47, 77, 94, 122, 142
  Rusty 27, 103
  Yellow-headed 100, 103
Blackbird sp. 27
Bluebird, Eastern 25, 94, 140, 145
Blue Jay 10, 25, 47, 74, 87, 88, 94, 139
Bobolink 77, 103, 126, 142, 149
Bobwhite, Northern 21, 70, 93, 108, 134, 135, 149
Bufflehead 15, 21, 70
Bunting,
  Indigo 10, 30, 34, 37, 77, 103, 142
  Painted 47, 67, 69, 77, 100, 147, 148
  Snow 30, 37
Buteo sp. 23

C
Canvasback 15, 21, 33, 34, 35, 37, 103, 104, 108
Cardinal I 47
Cardinal, Northern 27, 77, 88, 94, 142
Catbird, Gray 10, 15, 19, 25, 34, 36, 38, 75, 120, 121, 140
Chat, Yellow-breasted 76, 119, 141
Chickadee,
  Black-capped 25
  Carolina 10, 25, 74, 88, 94, 139
Chuck-will's-widow 67, 72, 133, 137, 148
Coot, American 19, 23, 71, 93, 94, 136, 150
Cormorant, Double-crested 70, 99, 105, 107, 108, 135, 148
Cowbird, Brown-headed 27, 77, 94, 142
Crane,
  Sandhill 23, 31, 33, 36, 38, 51, 93, 99, 101, 108, 133, 136
  Whooping 15, 23, 36
Creeper, Brown 25, 74, 94, 109, 152
Crossbill, Red 27, 38, 109, 152
Crow,
  American 25, 74, 93, 94, 139
  Fish 25, 32, 68, 74, 100, 102, 106, 134, 139, 148, 150, 151
Cuckoo,
  Black-billed 11, 67, 68, 69, 72, 99, 101, 104, 105, 108, 121, 133, 137, 148
  Yellow-Billed 11, 72, 88, 99, 105, 119, 124, 126, 132, 137
Cuckoo sp. 137

D
Dickcissel 67, 77, 103, 107, 133, 142, 149, 151
Dove,
  Eurasian Collared 2, 3, 23, 72, 137
  Inca 95
  Mourning 23, 72, 94, 137, 151
  White-winged 37, 98, 101, 147, 149, 150
Dowitcher,
  Long-billed 99
  Short-billed 69, 72, 101, 108, 133, 136, 148, 149
Duck,
  American Black 15, 21, 93
  Black-bellied Whistling- 70, 99, 135, 147, 148, 149, 150
  Long-tailed 18, 21, 30, 31, 34, 35, 37, 98, 100, 108
  Ring-necked 21, 35, 70, 93, 108, 150, 151
  Ruddy 15, 21, 38
  Wood 21, 70, 135
Duck sp. 21
Dunlin 23, 36, 69, 72, 99, 101, 105

E
Eagle,
  American 47
  Bald 15, 23, 47, 48, 49, 51, 71, 105, 136, 151
  Golden 23, 30, 31, 33, 38, 101, 108
Egret,
  Cattle 71, 99, 101, 105, 134, 135, 149, 150
  Great 21, 30, 31, 33, 34, 36, 47, 70, 105, 108, 135, 148, 150, 151
  Snowy 99, 148, 149, 150
Empidonax sp. 73, 138

F
Falcon,
  Peregrine 11, 25, 30, 32, 36, 38, 51, 102, 105, 107, 109, 138, 148, 150, 151
  Prairie 96
Finch,
  House 27, 77, 142
  Purple 27, 30, 32, 37, 38, 67, 77, 94, 103, 104, 107, 109, 149
Flicker, Northern 15, 25, 73, 94, 132, 138
Flycatcher,
  Acadian 11, 67, 73, 88, 106, 138
  Alder 102, 109, 138, 152
  Great Crested 67, 73, 106, 122, 138
  Least 11, 68, 73, 138
  Olive-sided 67, 73, 99, 106, 133, 138

Scissor-tailed 68, 73, 98, 100, 102, 106, 133, 134, 138, 148, 149, 150
Willow 73, 99, 102, 109, 138, 148, 149, 152
Yellow-bellied 10, 102, 138

G
Gadwall 21
Gallinule,
Common 30, 34, 36, 105
Purple 47
Geese,
Cackling 16
Greater White-fronted 34
Snow 34
Gnatcatcher, Blue-gray 17, 25, 30, 34, 74, 88, 102, 106, 140
Goldeneye, Common 15, 21, 33, 34, 35, 37, 104, 108
Goldfinch, American 10, 27, 77, 94, 142
Goose,
Cackling 16, 21, 31, 33, 35, 100, 104, 147, 150
Goose, Canada 21, 70, 135
Greater White-fronted 18, 21, 31, 32, 34, 35, 37, 99, 100, 104, 133, 135
Ross's 15, 17, 19, 21, 33, 35, 37, 70, 100, 104
Snow 21, 31, 33, 34, 35, 37, 70, 93, 100, 104
Goshawk, Northern 15, 17, 19, 23, 30, 31, 38
Grackle, Common 27, 77, 94, 142
Grebe,
Eared 15, 33, 101, 108
Horned 15, 21, 38, 105, 108
Pied-billed 15, 21, 70, 135, 151
Red-necked 15, 21, 30, 31, 33, 98, 105
Western 30, 32, 33
Grosbeak,
Blue 77, 100, 103, 107, 142
Rose-breasted 10, 77, 107, 109, 142
Grouse,
Rough 67
Ruffed 21, 67, 70, 94, 133, 135
Gull,
Black-headed 96
Bonaparte's 23, 96, 105, 108
Franklin's 36, 101
Great Black-backed 15, 23, 32, 33
Herring 23, 72, 99, 105, 137
Iceland 32, 33, 98, 100, 101
Laughing 101
Lesser Black-backed 15, 17, 23, 32, 33, 36, 99, 101
Little 32
Ring-billed 23, 36, 72, 93, 137, 149, 151
Thayer's 31, 32
Gull sp. 23

H
Harrier, Northern 23, 36, 71, 136
Hawk,
Broad-winged 11, 51, 71, 105, 108, 136
Cooper's 10, 23, 71, 94
Duck 47
Ferruginous 96
Red-shouldered 23, 71, 108, 136
Red-tailed 11, 13, 14, 23, 31, 47, 71, 94, 122, 136
Rough-legged 15, 23
Sharp-shinned 10, 23, 71, 136
Heron 23
Black-crowned Night- 23, 33, 36, 71, 99, 108, 135, 150, 151
Great Blue 21, 46, 51, 67, 70, 135
Green 15, 19, 23, 71, 105, 135
Little Blue 105, 148, 149, 150, 151
Yellow-crowned Night- 71, 101, 105, 108, 150, 151
Hummingbird,
Black-chinned 89
Broad-tailed 89, 91
Ruby-throated 47, 73, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 99, 102, 105, 108, 134, 137
Rufous 23. 147, 149

I
Ibis, Glossy 99, 100, 101

J
Jay, Blue 10, 25, 47, 74, 87, 88, 94, 139
Junco,
Dark-eyed 27, 77, 142
Slate-colored 6, 7, 9

K
Kestrel, American 25, 73, 133, 138
Killdeer 23, 32, 71, 94, 136
Kingbird,
Eastern 73, 109, 138
Western 98, 99, 147, 148
Kingfisher, Belted 23, 47, 73, 137
Kinglet,
Golden-crowned 10, 25, 74, 94, 119, 140
Ruby-crowned 9, 25, 74, 94, 140
Kite,
Mississippi 53, 54, 71, 99, 100, 101, 135, 148, 149
Swallow-tailed 98, 101, 147, 148, 149

L
Lark, Horned 25, 36, 74, 139
Longspur,
Lapland 18, 25, 32, 36, 100, 102, 106
McCown's 30, 32
Smith's 32
Loon,
Common 15, 21, 70, 99, 105, 151
Pacific 30, 31, 33, 101, 105

Red-throated 30, 32, 33, 36, 100, 101, 105

M
Mallard 21, 70, 93, 135
Martin, Purple 74, 106, 139
Meadowlark,
Eastern 27, 77, 94, 142
Western 27
Merganser,
Common 21, 30, 31, 32, 33, 34, 36, 38, 98, 100, 103, 104, 107, 108, 147, 150, 151
Hooded 21, 70, 133, 135
Red-breasted 15, 21, 33, 36, 38, 70, 104, 108
Merlin 11, 25, 30, 32, 34, 36, 38, 99, 102, 105, 108, 138
Mockingbird 42, 46, 75
Northern 25, 75, 94, 140
Murrelet, Long-billed 95

N
Nighthawk, Common 30, 34, 36, 72, 137
Nuthatch,
Brown-headed 25, 68, 74, 139, 149
Red-breasted 10, 15, 25, 36, 38, 47, 74, 126, 133, 139, 152
White-breasted 25, 74, 94, 139

O
Oriole,
Baltimore 77, 103, 107, 142
Orchard 47, 77, 107, 152
Osprey 48, 51, 67, 71, 105, 108, 135, 151
Ovenbird 9, 75, 102, 118, 119, 120, 122, 124, 140
Owl,
Barn 15, 23, 67, 72, 105, 149, 150
Barred 15, 23, 68, 72, 87, 94, 137
Eastern Screech 23, 72, 94, 137
Great Horned 23, 72, 122, 137
Long-eared 15, 18, 23, 30, 31, 32, 34
Northern Saw-whet 11
Saw-whet 11, 67, 72, 108, 133, 137
Short-eared 23, 32, 33, 101
Long-eared 30

P
Parula, Northern 11, 76, 102, 106, 141
Pelican, American White 15, 18 , 21, 99, 101, 105, 135, 147, 148, 149
Pewee, Eastern Wood- 10, 67, 73, 138
Phalarope sp. 137
Phalarope, Wilson's 99, 100, 101, 137, 148
Phoebe, Eastern 10, 25, 73, 88, 138
Pigeon, Rock 23, 72, 137
Pintail, Northern 21, 107, 133, 135
Pipit, American 25, 38, 75, 102, 106, 109, 140
Plover,
American Golden- 99, 101, 105, 134, 136
Black-bellied 101, 148
Piping 145, 148
Semipalmated 71, 101, 105, 136, 149

R
Rail,
Clapper 47
King 47
Virginia 23, 36, 67, 71, 105, 108, 121
Yellow 121
Ravens 98
Common 25, 36, 74, 106, 109, 139
Redhead 21, 33, 35, 37, 70, 99, 103, 104, 108
Redstart, American 9, 76, 119, 120, 121, 141
Robins 126
American 4, 11, 15, 25, 75, 88, 93, 94, 140
Rough-winged, Northern 25

S
Sanderling 101, 136, 148
Sandpiper,
Buff-breasted 99
Least 23, 33, 36, 72, 105, 136, 148
Pectoral 72, 105, 136, 148, 150
Semipalmated 72, 136
Solitary 71, 99, 136
Spotted 71, 108, 136
Stilt 72, 99, 101, 136, 148, 149
Upland 99
Western 72, 148
White-rumped 72, 99, 101, 105
Sapsucker, Yellow-bellied 10, 25, 73, 94, 138, 147, 151
Scaup,
Greater 21, 31, 33, 34, 35, 37, 70, 100, 103, 104, 107, 108
Lesser 15, 21, 31, 70, 93, 104, 108, 150
Scaup sp. 21
Scoter,
Black 108
Surf 15, 17, 21, 31, 33, 35, 104
White-winged 30, 31, 32, 33, 34, 35, 37, 98, 100, 103, 104, 107, 108
Shoveler, Northern 21, 70, 107, 135, 148
Shrike, Loggerhead 25, 36, 38, 67, 73, 94, 102, 106, 109, 133, 134, 138, 149, 151
Siskin, Pine 11, 27, 30, 32, 34, 37, 38, 68, 77, 103, 104, 107, 109, 152
Snipe, Wilson's 23, 72, 94, 137
Sora 67, 71, 134, 136
Sparrow,
American Tree 27, 30, 32, 34, 98, 100, 103
Bachman's 67, 68, 76, 102. 147, 149
Chipping 27, 38, 76, 142
Field 27, 76, 94, 142
Fox 27, 34, 94
Grasshopper 76, 100, 149

Harris's 15, 27, 30, 34
Henslow's 77, 103, 107, 149
House 27, 77, 142
Lark 68, 76, 100, 103, 148
Le Conte's 27, 32, 34, 103, 117
Lincoln's 10, 15, 77, 100, 103, 142
Nelson's Sharp-tailed 121
Savannah 27, 76, 94, 142, 151
Song 15, 27, 77, 94, 142
Swamp 27, 77, 94, 142
Vesper 27, 37, 103, 107, 133, 134, 142, 152
White-crowned 27, 77, 94, 109
White-throated 27, 77, 94, 149
Starling, European 25, 75, 93, 94, 140
Stilt, Black-necked 71, 99, 101, 136, 148, 149, 150
Swallow 25, 74
Bank 68, 74, 139
Barn 47, 74, 102, 106
Cave 98, 99, 100
Cliff 74, 99, 106, 139, 152
Northern Rough-winged 5, 25, 30, 34, 36, 74, 100, 106, 139
Tree 18, 25, 32, 36, 74, 102, 139
Swan, Mute 21, 100
Swift, Chimney 45, 72, 102, 105, 117, 137

T

Tanager,
Scarlet 10, 47, 77, 103, 107, 109, 142, 148
Summer 11, 77, 88, 103, 107, 142
Teal,
Blue-winged 21, 70, 135, 149, 150
Green-winged 15, 21
Tern,
Black 67, 72, 101, 108, 149
Caspian 105, 108, 137, 148, 149, 151
Common 137, 151
Forster's 15, 23, 32, 33, 72, 105, 108, 133, 137, 151
Least 148
Thrasher, Brown 25, 75, 94, 140
Thrush,
Gray-cheeked 10, 11, 75, 140
Hermit 25, 75, 94, 147, 152
Swainson's 9, 75, 140
Wood 10, 75, 106, 140
Titmouse,
Eastern Tufted 10
Tufted 10, 25, 74, 87, 88, 94, 139
Towhee, Eastern 6, 10, 27, 76, 94, 142
"Traill's" ssp. 138
Turkey, Wild 21, 70, 135

V

Veery 10, 75, 140, 149
Vireo,
Bell's 67, 73, 102, 147, 149
Blue-headed 9, 15, 16, 25, 32, 36, 73, 106, 109, 139
Philadelphia 10, 73, 102, 139
Red-eyed 10, 74, 106, 118, 119, 120, 121, 139
Warbling 67, 73, 100, 102, 106, 109, 139, 152
White-eyed 11, 73, 106, 138
Yellow-throated 10, 106, 109, 138
Vulture,
Black 18, 23, 62, 71, 93, 135
Turkey 23, 71, 94, 135

W

Warbler,
Bay-breasted 9, 76, 119, 120, 121, 141
Black-and-white 9, 15, 18, 27, 30, 34, 37, 75, 106, 109, 119, 120, 140
Warbler,
Blackburnian 9, 76, 102, 106, 120, 122, 141, 152
Blackpoll 10, 76, 102, 121, 122, 126, 141
Black-throated Blue 5, 6, 8, 9, 76, 102, 106, 141
Black-throated Green 9, 76, 102, 107, 119, 141
Blue-winged 10, 75, 102, 106, 140, 151
"Brewster's" 109
Canada 10, 76, 100, 141
Cape May 4, 5, 6, 7, 8, 9, 76, 141
Cerulean 76, 102, 106, 122, 149, 151
Chestnut-sided 9, 76, 119, 120, 141
Connecticut 11, 67, 75, 102, 106
Golden-winged 10, 75, 102, 106, 109, 133, 140
Hooded 10, 76, 102, 106, 141
Kentucky 10, 75, 102, 106, 141
Magnolia 9, 76, 109, 118, 119, 120, 141, 147, 152
Mourning 102, 106, 126, 141, 149
Myrtle 10
Nashville 10, 75, 102, 106, 121, 141
Orange-crowned 11, 18, 27, 32, 34, 37, 75, 106, 140
Palm 9, 27, 32, 34, 38, 76, 119, 126, 141
Pine 27, 34, 76, 141
Prairie 11, 76, 102, 106, 141
Prothonotary 75, 88, 100, 102, 106, 140
Swainson's 6, 67, 75, 102, 106, 151, 152
Tennessee 4, 5, 6, 7, 9, 60, 61, 75, 102, 106, 117, 118, 119, 120, 121, 122, 123, 124, 140, 144, 146
Western Palm 9
Wilson's 10, 76, 102, 107, 141
Worm-eating 10, 75, 102, 106, 109, 140
Yellow 6, 30, 34, 76, 102, 109, 141, 149
Yellow-rumped 27, 76, 94, 126, 141, 152

Yellow-throated 76, 100, 106, 109, 141
Waterthrush,
Louisiana 6, 75, 100, 102
Northern 11, 75, 120, 140
Waxwing, Cedar 11, 25, 47, 75, 94, 140
Whip-poor-will, Eastern 72, 105, 108, 137
Wigeon,
American 21, 70, 104, 135, 150
Eurasian 31
Willet 67, 68, 71, 101, 108, 109, 133, 136
Woodcock, American 23, 32, 72, 108, 137, 149
Woodpecker,
Downy 11, 25, 73, 94, 117, 138
Hairy 11, 25, 73, 94, 138
Pileated 15, 25, 47, 73, 94, 138
Red-bellied 25, 73, 87, 88, 94, 137
Red-headed 23, 73, 94, 108, 137, 151
Wren,
Bewick's 67, 68, 74, 94, 102
Carolina 11, 25, 74, 94, 140
House 11, 25, 74, 139
Marsh 19, 25, 34, 36, 68, 74, 102, 106, 133, 139
Sedge 15, 68, 74, 102, 139
Winter 11, 15, 25, 74, 94, 139

Y

Yellowlegs,
Greater 71, 105, 136
Lesser 71, 99, 105, 136
Yellowthroat, Common 10, 17, 27, 32, 34, 75, 102, 106, 119, 120, 141

INSTRUCTIONS TO AUTHORS

The Migrant records observations and studies of birds in Tennessee and adjacent areas.

SUBMISSIONS: The manuscript should be submitted electronically to Bob Ford at editorthemigrant@gmail.com. Submission of hard copies is optional. If so desired the original and two copies of the manuscript should be sent to the: Editor: Bob Ford, 808 Hatchie, Brownsville, TN 38012 editorthemigrant@gmail.com. Manuscripts that have been published in other journals should not be submitted.

MATERIAL: The subject matter should relate to some phase of Tennessee ornithology. It should be original, factual, concise and scientifically accurate.

STYLE: Both articles and short notes are solicited; recent issues of *The Migrant* should be used as a guide in the preparation of manuscripts. Where more detail is needed, reference should be made to *Scientific Style and Format*, eighth edition, by the Council of Science Editors, councilscienceeditors.org.

COPY: Manuscripts should be double-spaced with adequate margins for editorial notations and emailed in Word.docx. Tables and figures should be prepared in a separate file with appropriate headings; see *Scientific Style and Format* for examples of appropriate form for tables. Photographs intended for reproduction should be at least 300 dpi or sharp with good contrast on glossy white paper. Weights, measurements, and distances should be in metric units. Dates should be in "continental" form (e.g., 16 March 1997). Use the 24-hour clock (e.g., 0500 or 1900).

NOMENCLATURE: The scientific name of a species should be given after the first use of the full common name in the text. The scientific name should be italicized and in parentheses. Names should follow the *A. O. U. Check-list of North American Birds* (seventh edition, 1998, or supplements).

TITLE: The title should be concise, specific and descriptive.

ABSTRACT: Manuscripts of five or more pages should include an abstract. The abstract should be less then 5% of the length of the manuscript. It should include a brief explanation of why the research was done, the major results, and why the results are important.

LITERATURE CITED: List all literature citations in a "Literature Cited" section at the end of the text. Text citations should include the author and year.

IDENTIFICATION: Manuscripts including reports of rare or unusual species or of species at atypical times should include: date and time, light and weather conditions, exact location, habitat, optical equipment, distance, behavior of bird, comparison with other similar species, characteristic markings, experience of observer, other observers verifying the identification and reference works consulted.

REPRINTS: Reprints are available to authors on request. Billing to authors will be through the TOS treasurer. Request for reprints must be made well in advance of printing.

SEASON REPORTS: Observations that are to be considered for publication in "The Season"section should be mailed to the appropriate Regional Compiler. Consult a recent issue of *The Migrant* for the name and address of the compiler.

CONTENTS

AN OVERVIEW OF A 51 YEAR STUDY OF BIRD CASUALTIES AT NASHVILLE'S WSMV TELEVISION TOWER 1960-2010
Sandy Bivens and Jenny Nehring 113

2015 TENNESSEE FALL BIRD COUNTS
Ron Hoff 133

MINUTES OF THE BOARD OF DIRECTORS 2015 FALL MEETING
Cyndi Routledge 144

THE SUMMER SEASON: 1 June – 31 July 2015
Richard L. Knight, Editor 147

WESTERN COASTAL PLAIN
Dick D. Preston 147

HIGHLAND RIM AND BASIN REGION
Stephen C. Zipperer 149

CUMBERLAND PLATEAU/RIDGE AND VALLEY REGION
Richard L. Knight 150

EASTERN MOUNTIAN REGION
Richard P. Lewis 151

SPECIES INDEX 153